BLADEN LIBRARY SCARBOROUGH
3 1761 02928 8792

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY

EDITED BY

G. F. STOUT,

WITH THE CO-OPERATION OF PROFESSOR H. SIDGWICK, PROFESSOR W. WALLACE, DR. VENN, AND DR. WARD.

NEW SERIES, VOL. I.—1892.

Reprinted by permission of
THOMAS NELSON AND SONS LTD. EDINBURGH
KRAUS REPRINT LTD.
Vaduz
1964

Printed in Germany
Lessing-Druckerei Wiesbaden

SCARBOROUGH
COLLEGE
LIBRARY

CONTENTS OF VOL. I., N.S.

PAGE

EDITOR.—Prefatory Remarks 1

ARTICLES.

ALEXANDER, S.—The Idea of Value 31
BAIN, A.—Pleasure and Pain 161
DONOVAN, J.—The Festal Origin of Human Speech 325
EASTWOOD, A.—Lotze's Antithesis between Thought and Things . 305, 470
GILMAN, B. I.—On the Properties of a One-dimensional Manifold . 518
JOHNSON, W. E.—The Logical Calculus 3, 235, 340
McTAGGART, J. ELLIS.—The Changes of Method in Hegel's Dialectic 56, 188
MARSHALL, H. RUTGERS.—The Field of Æsthetics Psychologically Considered 358, 453
MORRISON, Rev. W. D.—The Study of Crime 489
MORGAN, C. L.—The Law of Psychogenesis 72
TITCHENER, E. B.—The Leipsic School of Experimental Psychology . 206

DISCUSSIONS.

ALEXANDER, S.—Dr. Münsterberg and his Critics 251
BALDWIN, J. M.—Feeling, Belief and Judgment 403
DELABARRE, E. B.—The Influence of Muscular States on Consciousness 379
FRANKLIN, C. L.—Dr. Hillebrand's Syllogistic Scheme 527
MARSHALL, H. RUTGERS.—The Definition of Desire 400
MOURET, G.—Sur la Distinction entre les Lois ou Axiomes et les Notions 101
SIDGWICK, H.—The Definition of Desire 94
TITCHENER, E. B.—Dr. Münsterberg and his Critics 397

CRITICAL NOTICES.

PAGE

ADAM, J.—John Burnet, *Early Greek Philosophy* 539
BOSANQUET, B.—B. Erdmann, *Logik* 265
EDITOR.—J. Sully, *The Human Mind* 409
FRANKLIN, C. L.—E. Schröder, *Vorlesungen über die Algebra der Logik* 126
JONES, C. C.—F. Hillebrand, *Die neuen Theorien der Categorischen Schlüsse* 276
LOWNDES, M. E.—J. M. Baldwin, *Handbook of Psychology: Feeling and Will* 272
MACKENZIE, J. S.—G. Simmel, *Einleitung in die Moralwissenschaft* . 544
MYERS, F. W. H.—A. Binet, *Les Altérations de la Personnalité* . . 417
ROBERTSON, G. C.—F. Picavet, *Les Idéologues* 118
SIDGWICK, H.—H. Spencer, *Justice* 107
SORLEY, W. R.—M. Berendt und J. Friedländer, *Spinoza's Erkenntnisslehre in ihrer Beziehung zur modernen Naturwissenschaft und Philosophie* 132
,, B. Perez, *La Caractère de l'enfant à l' homme* . . 422
WARD, J.—W. James, *Text-book of Psychology* 531

NEW BOOKS.

D'Alviella, Goblet.—*Lectures on the Origin and Growth of the Conception of God as illustrated by Anthropology and History* 140
Adam, J.—*The Nuptial Number of Plato* 282
Avencebrolis (Ibn Gebirol).—*Fons Vitæ.* Ed. Cl. Bäumker . . . 435
Arreat, L.—*Psychologie du Peintre* 431
Bäumker, Cl.—*Beiträge zur Geschichte des Mittelalters. Cf.* Avencebrolis 435
Bertauld, Pierre Auguste.—*Esprit et Liberté* 288
Boethius.—*Die dem B. falschlich zugeschriebene Abhandlungen des Dominicus Gundisalvi de Unitate.* Ed. P. Correns . . . 435
Brentano, F.—*Das Genie* 137
,, *Das Schlechte als Gegenstand dichterischer Darstellung* . 436
Caird, E.—*Essays on Literature and Philosophy* 426
Cattell, J. McK., and G. S. Fullerton.—*On the Perception of Small Differences* 557
Christinnecke, J.—*Causalität und Entwickelung in der Metaphysik Augustins* 143
Correns, P.—*Beiträge zur Geschichte des Mittelalters. Cf.* Boethius . 435
Delabarre, E. B.—*Ueber Bewegungsempfindungen* 140
Dewaule, L.—*Condillac et la Psychologie Anglaise Contemporaine* . . 432
Dixon, E. T.—*An Essay on Reasoning* 285
Dillmann, E.—*Eine neue Darstellung der Leibnizischen Monadenlehre auf Grund der Quellen* 435
Faggi, A.—*La Religione e il Suo Avenire. Secondo Eduardo Hartmann* . 437
Fonsegrive, G. L.—*Elements de Philosophie* 559

PAGE
Fullerton, G. S., and J. McK. Cattell.—*Perception of Small Differences* . 557
Geulincx, A.—*Opera Philosophica.* Ed. J. P. N. Land 560
De Greef, G.—*Les Lois Sociologiques* 288
Groos, K.—*Einleitung in die Æsthetic* 292
Husserl, E. G.—*Philosophie der Arithmetik* 565
Jones, E. E. C.—*An Introduction to General Logic* 554
Kent, G.—*Die Lehre Hegels der Erfahrung und ihre Bedeutung für das Erkennen* 293
Land, J. P. N.—*Cf.* Geulincx 560
Lietz, H.—*Die Probleme im Begriff der Gesellschaft bei Auguste Comte im Gesammtzusammenhang seines Systems* 289
Lotze, H.—*Kleine Schriften* (Bd. iii.) 290
Locke, J.—*Cf.* Russell 431
McCrie, G. M.—*Cf.* C. Naden 145
Mitchell, E. M.—*A Study of Greek Philosophy* 145
Mostratos, D. G.—*Die Pädagogik des Helvetius* 144
Muirhead, J. H.—*The Elements of Ethics* 555
Müller, F. Max.—*Anthropological Religion* 284
Murray, J. C.—*An Introduction to Ethics* 556
Naden, C.—*Further Reliques of Constance Naden.* Ed. by G. M. McCrie 145
Ochorowitz, J.—*Mental Suggestion* 286
Oelzelt-Newin, A.—*Über Sittliche Dispositionen* 564
Pearson, K.—*The Grammar of Science* 429
Proal, L.—*Le Crime et la Peine* 139
De Roberty, E.—*Essai sur quelques Theories Pessimistes de la Connaissance* 433
Royce, J.—*The Spirit of Modern Philosophy* 427
Russell, J. E.—*The Philosophy of Locke in extracts from the Essay concerning Human Understanding* 431
De la Saussaye, P. D. Ch.—*Manual of the Science of Religion* . . 146
Seth, A.—*The Present Position of the Philosophical Sciences* . . . 138
Simmel, G.—*Einleitung in die Moralwissenschaft* 434
„ *Die Probleme der Geschichtsphilosophie* 561
Sidgwick, A.—*Distinction and the Criticism of Beliefs* 283
„ „ „ „ 552
Sterret, J. M.—*Studies in Hegel's Philosophy of Religion, with a chapter on Christian Unity in America* 285
Sully, J.—*The Human Mind* 147
Thamin, R.—*Education et Positivisme* 140
Twardowski, K.—*Idee und Perception. Eine erkenntnisstheoretische Untersuchung aus Descartes* 290
Varisco, D.—*Ricerche intorno ai Fondamenti di Pensieri* 437
Welton, J.—*Manual of Logic* 144
Windelband, W.—*Geschichte der Philosophie* (Final instalment) . . 291
Wundt, W.—*Vorlesungen über die Menschen-und Thierseele* . . . 562
Worms, R.—*La Morale de Spinoza* 287

NOTES AND NEWS.

PAGE

Baldwin, J. M.—Experiments on Colour-Vision 156
Cattell, J. McK., and G. S. Fullerton.—The Psychophysics of Movement 446
Ladd, G. T.—Contribution to the Psychology of Visual Dreams . . 299
Robertson, G. C.—Helen Keller 574
Wallaschek, R.—The Origin of Music 154
International Congress of Psychology for 1892 . . . . . 159, 580
Croom Robertson Testimonial 452, 588

PHILOSOPHICAL PERIODICALS 148, 295, 438, 567

MISCELLANEOUS 160, 304

New Series. No. 1.] [January, 1892.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

I.—PREFATORY REMARKS.

By the Editor.

With the present number, Mind makes a fresh start under new editorship. This change involves no real breach of continuity. The leading external features of the old series will be retained in the new. In this respect there are only two minor differences worth noting. In the first place, we propose to give regularly full notices of the more important articles in foreign periodicals, such as appeared in the early numbers of the old series, but were afterwards discontinued. In the next place, we hope to be able to introduce, somewhat more frequently than in the past, reports by specialists of current work in their several departments.

We shall endeavour to imitate the catholicity and impartiality which characterised the conduct of Mind under its late genial and many-sided editor. Our ideal is to make it an organ for the expression of all that is most original and valuable in current English thought, without predilection for any special school or any special department of Philosophy or Psychology. What is of prime importance

to us is that our pages shall be filled with genuine work to the exclusion of merely dilettante productions. In general, we desire to publish only such articles as really advance the subject of which they treat a step further. Nor ought this to be considered an extravagant aim for the only English philosophical journal in existence. But it is certain that we must fall lamentably short of our ideal unless we receive the hearty sympathy and assistance of professional students of philosophy, who have now, we hope, reached such a degree of mutual understanding as to render co-operation more easy and discussion more fruitful than they could be when MIND was first started—a result to which MIND itself has in large measure contributed.

II.—THE LOGICAL CALCULUS. I. GENERAL PRINCIPLES.

By W. E. Johnson.

§ 1. *Principles of a Symbolic Calculus.* As a material machine is an instrument for economising the exertion of force, so a symbolic calculus is an instrument for economising the exertion of intelligence. And, employing the same analogy, the more perfect the calculus, the smaller would be the amount of intelligence applied as compared with the results produced. But as the exertion of *some* force is necessary for working the machine, so the exertion of *some* intelligence is necessary for working the calculus. It is then important to examine the kind and degree of intelligence that are demanded in the employment of any symbolic calculus. It will appear that the *logical* calculus stands in a unique relation to intelligence; for it aims at exhibiting, in a non-intelligent form, those same intelligent principles that are actually required for working it.

To some critics this characteristic would appear a ground of condemnation from the outset. Certainly the unique position of the Logical Calculus—which seems to be trying to reduce intelligence to non-intelligence—demands very careful treatment, if we are to avoid a purely sterile or circular exhibition of the processes of thought.

I will attempt to enumerate briefly what appear to be the principles common to every species of symbolic calculus. (1) The symbols must be understood to *represent*—without exhaustively characterising—things other than themselves. (2) Each symbol must have a permanent and unambiguous import throughout any connected series of operations. (3)

It must be possible that *different* symbols or combinations of symbols may represent the *same identical* thing, and that (4) symbols which represent the same thing may be *substituted* for one another. (5) Statements of equivalence must be understood as having *propositional import*, and (6) the results obtained by substitution must be understood to be *inferences* from the statements of equivalence. (7) This requires also a recognition of the distinction between *universal* and *particular* symbols, and (8) of the principle that a universal symbol may be replaced by any other symbol representing an object in the sphere covered by the universal. And, finally, in order that the replacement of a simple symbol by a complex synthesis of symbols may be valid, we require (9) a recognition of the force of the *bracket*, and (10) the postulate that the synthesis of symbols shall yield a product *homogeneous* with the symbols synthesised. The intelligence demanded in the employment of a symbolic calculus, then, involves a recognition of (1) the Representativeness of Symbols, (2) the convention of Permanence of Import, (3) the possibility of Equivalence, (4) the Method of Substitution, (5) the Propositional Import of Equivalences, (6) the Inferential relation between Equivalences, (7) the distinction between universal and particular symbols, (8) the applicational interpretation of Universals, (9) the force of the Bracket, and (10) the Postulate of Homogeneity.

With regard to (1) the Representativeness of Symbols, it is important to point out that the symbol must be capable (2) of unambiguously indicating its object, although it can never by its own inward construction represent exhaustively the entire characterisation of its object. This combination of unambiguous indication and unexhaustive characterisation is the necessary condition and explanation of the possibility (3) that *different* symbols, each of which represents a different aspect or mode of indicating its object, may yet refer us to one and the same object. This, then, accounts for the possibility that a system which primarily involves the *conventional* equivalence $a = a$, should also have room for the *real* equivalence $a = b$. Now these *real* equivalences form the ground for the employment of (4) the Method of Substitution. But to erect this method into the position of the sole principle for arriving at truth, as Jevons does, is an error akin to the old nominalists' fallacy. We require, as basis for arriving at any but mere verbal truth, a knowledge of the axioms which state what syntheses of symbols are equivalent to one another, before any use can be made of

the Method of Substitution. The next four principles, which indicate how the method can be used, are of special importance in an account of Logic. For proposition, inference, universal and particular are the very elements which constitute the science. It is, then, essential to point out that we cannot work any calculus without being conscious that (5) *equations are propositions,* affirming some truth; that (6) from these propositions other equations are *inferred,* wherever we use the symbol $\therefore$ (*therefore*); that (7 and 8) these inferences continually involve the replacement of universal by more particular symbols. Thus, in the equivalence $(a + b)^2 = a^2 + 2ab + b^2$, the symbols a and b are universal, *i.e.*, replaceable by any other symbols of number, but the symbols 2 and + are particular. Further, these replacements often involve the substitution of a *complex* for a *simple* symbol, and this is never legitimate without enclosing the complex in a bracket or using some equivalent convention. The mistakes that beginners in algebra make in this matter are familiar to all teachers of the elements of mathematics. But it is not generally recognised that the principle of correct bracketing plays as important a part in logic as in mathematics. Indeed able logicians seem in this matter to have made mistakes on a level with the schoolboy's mistakes in algebra. Finally we must recognise explicitly that these complex combinations of symbols can only be used in a calculus, if they represent objects in the same *sphere*, and therefore obey the same laws as the simple symbols. The necessity for this Postulate of Homogeneity restricts the range of synthetic systems of symbolism. For, without it, we should never be able to reach formulæ more *complicated* than the initial axioms; and all possibility of a calculus would vanish. Now it is the indefinite increase of *complication* in our results that gives the unique character to a calculus. The "intellectual intuition" which perceives the truth of laws in their simple —but absolutely universal—form is incompetent to perceive the same truths in more complicated forms. A symbolic calculus is an instrument for transcending the limits of intellectual intuition. But all thinking by help of language involves the same principle.[1]

[1] Logical and mathematical symbols are properly *re-representative.* That is, the letters a, b, c . . . are *substitute* signs for words or numbers, which are, in their turn, *expressive* signs for ideas. [See Mr. Stout's article on "Thought and Language" in MIND, April, 1891.] The symbols + and × are, however, simply representative (being mere *synonyms* for ordinary words); that is, they *normally* perform their function in thought only through and by means of attention to their meaning.

We have now explicitly recognised certain of the forms in which intelligence has to be exercised in working a symbolic calculus. We cannot feel sure that all these forms have been exhaustively enumerated. But such explicit enumeration as has been offered will give an indication of the peculiar relation in which the Logical Calculus stands to thought. For the same intelligent principles have to be employed in using the calculus as are non-intelligently developed in its results. This must be admitted once for all as characterising the unique nature of logical symbolism.

§ 2. *The Analysis of System or the Synthesis of Propositions.* The fundamental work of Pure Formal Logic is an investigation into the principles according to which the analysis of a system exhibits it as a synthesis of propositions. The proper procedure of Logic is throughout *analytical.* We must begin with an analysis of system, and determine first how a synthesis of propositions yields a totality of interrelated elements. This primary analysis must be carried so far as to resolve any complex into *propositions* as constituents. It precedes the analysis of propositions into those elements that are not themselves propositions, just as the Physical analysis of a substance into molecules precedes the Chemical analysis of the molecule into atoms. This formal analogy will be found not altogether without value. For some symbolists appear to have introduced confusion by identifying the "Physical" combination of propositions into a system with the "Chemical" combination of subject and predication into a proposition. We can best keep clear of this confusion by first treating the less disputable and more absolutely formal portion of Logic, *viz.*, the synthesis of propositions into a system. This will necessitate an inquiry (A) into the general conception of *synthesis*, and (B) into the general conception of the *proposition.*

§ 3. (A) *With respect to synthesis in general*, we must observe that every mode of combining propositions is expressed by a word belonging to the part of speech called *conjunction.* There are logical and non-logical conjunctions: but, using the term in a logical sense, we may regard every conjunction as expressing some mode of logical synthesis of propositions. Now the fundamental mode of logically combining propositions is represented by the conjunction *and.* This mode of combination is called *par excellence* "conjunction". It will be found that all other purely logical conjunctions depend for their import upon this conjunction alone. It is, therefore, important to give a clear indication of its force. The

relation expressed by *and* is simply the *emptiest* of all relations. It expresses merely the bringing of two propositions together into one system, without subordination or any definable connexion other than is indicated by their being face to face in one and the same system. It is, therefore, the conjunction of *pure* synthesis, presupposed in and underlying all specific syntheses. Its nature will be made more explicit when we come to consider the laws which govern its use. Meanwhile we may notice some common misunderstandings on this subject. When we bring together two propositions *a*, *b*, by means of the conjunction *and*, the result is '*a* and *b*'. Now this result is itself a proposition: *i.e.*, we may predicate of it truth or falsity, and it may be combined with other propositions, in precisely the same way as the (relatively) simple proposition *a*. This is, perhaps, obvious; but logicians have practically neglected or denied it. They would say that '*a* and *b*' does not represent *one* proposition but *two*. But such a view involves a disregard, on the one hand, of the force of bringing the two propositions together; and, on the other hand, of the synthesis that is already implicit in the simpler proposition *a*. For the conception of a *molecular* proposition is purely ideal. Any actual proposition is indefinitely analysable into component propositions somehow synthesised into a unity. Hence an explicit introduction of *and* does not intrinsically affect the character of the proposition, as single or double. On the other hand, it is essential to note the reality of the process involved in bringing two propositions face to face and examining their combined force. This is shown familiarly in the combination of the two premisses of a syllogism. For here some newly apprehended truth is often brought out by the active collision of two truths that have perhaps been long in the possession of the same mind but never contemplated as belonging to the same system. Yet the little particle *and*, which connects the two premisses of a syllogism, has always been neglected and despised, while the particle *if*, which connects the premisses with the conclusion, has received its due attention. We see, then, that the *product* or *resultant* of bringing two propositions together is itself a proposition. The *process* or *operation* of bringing them together may be called *Reasoning*. Hence *Reasoning* should be defined as a process of forming a *Judgment*. The traditional way of explaining the relation between Reasoning and Judgment seems misleading. The difference is simply that between process and product. There is no product beyond the proposition and the system of propositions. The judgment is the final outcome of all logical

thought and process. Reasoning is, then, the process of synthesis—not the synthesised product. The *inferential* mode of synthesis--represented by the conjunction *if*—has been prominent in traditional logic; but a more general view of synthesis is here taken, in which inference will be shown to be dependent on and subordinate to *pure synthesis.*

§ 4. (B) As the conception of system in general is indicated by the conjunction *and*, so the conception of the *proposition in general* (*i.e.*, of the elements whose synthesis constitutes system) is indicated by the particle *not*. A proposition is simply the expression of a truth or falsity. What distinguishes the import of a proposition from any other combination of words is its being of necessity true or false. In affirming one thing, it denies an indefinite number of other things. Hence a proposition faces two ways. The possibility of its formation depends on the conception of its contradictory. On the one hand, a proposition has no meaning for us until we understand what it denies; and, on the other hand, denial and contradiction have no meaning except in reference to propositions. The mere presentation or impression 'blue' does not carry with it any reference to contrary or incompatible presentations: but the affirmation or declaration 'blue!' involves at least some such process as 'Red? no! not-red, but blue'; 'Green? no! not-green, but blue'. This process of bringing up in idea presentations, which are successively rejected, is that out of which the judgment emerges as a victorious claimant. By this reference to a struggle amongst incompatible rivals, and the supremacy of one over the others, the judgment is defined. The usual view of the judgment as connecting a subject with a predicate does not really help us. If we put the terms *man* and *mortal* together we merely get the complex *term* mortal man, not the *proposition*--man is mortal. The latter is distinguished from the former by its rejecting from the system of accepted reality *the immortal man*: its power of *affirming* is explicated by reference to what it *denies.* We see, then, that the definition of a proposition as that which expresses a truth or falsity immediately leads to the recognition, along with any one proposition, of that which expresses its falsity. Corresponding to every proposition *a*, there exists its contradictory *not-a*. Here again the exact force of the contradictory relation will be brought out, when we consider the laws regulating the use of the particle *not.*

§ 5. *The Conjunction 'and' and the Particle 'not'.* All that formal logic can do in the way of synthesis of proposi-

tions is contained in the laws regulating the use of these little words *and* and *not*. If this statement is doubted, it may be well to point out that the whole of the vast subject of the Mathematics of Number or Discrete Quantity rests on the fundamental ideas of distinction and addition—represented by the words 'other than' and 'together with'. It is not then remarkable that the sphere of pure logic should be limited to a development of the conceptions of pure synthesis and pure negation. The fundamental laws or axioms that regulate these operations must now be given. It is necessary to premise that the operations relate exclusively to *propositions*—not to terms, or classes, or ideas, or things.

§ 6. *The Fundamental Laws of Propositional Synthesis.* In expressing the axioms, which regulate the synthesis of propositions, we shall require to denote, in some unambiguous way, the following elements: (1) *Propositions;* (2) Pure Synthesis or *Determination;* (3) Pure Negation or *Contradiction*. It will be understood then that *propositions* are represented by *letters;* that *determination* is represented by simple *juxtaposition;* and that (so far as is convenient) *negation* may be represented by a *bar* written over the proposition denied. Before stating the laws it may be as well to recur to the general principles of symbolism. The statement of equivalence (symbolised by =) is common to all symbolisms, and use is made of it by the Method of Substitution. The laws which we are about to enunciate are both *universal* and *formal*. By being universal, I mean that the equivalences hold whatever propositions the symbols a, b, &c., may be supposed to stand for. Thus we may *apply* these universal equivalences by replacing the proposition-symbols by any other proposition-symbols (simple or complex). By being formal, I mean that the equivalences are stated on the responsibility of Formal Logic—that Formal Logic guarantees their validity.[1] The distinction between Formal and Non-Formal equivalences is of essential importance, but it has been generally neglected or obscured by symbolists. A formal equivalence is not necessarily *universal*, for it may involve *particular* symbols, *i.e.*, symbols for which no other symbol may be substituted, such as 0, 1, 2 . . . in Algebra. Hence the necessity for the distinction between *universal* and *particular* symbols. It may, perhaps,

[1] In Mathematics, formal universal equations are called *identities*. But this name is obviously unsuitable to describe *logically* formal and universal equivalences.

be pointed out that universal equivalences always contain *some* particular symbols, such as $+$, $\times$, $-$, $\div$, *for which no other symbol may be substituted.* Hence it is better to speak of the symbols themselves—not of the equivalences—as being universal or particular. The propositional import of the equivalences having been thus made explicit, we must next note the *inferential* character of our procedure. This is indicated by the "therefore" which precedes the derived equivalences. We need only finally state explicitly that the operation of pure synthesis or pure negation of propositions always yields as its result an *unambiguous proposition*; so that the complex synthesis of symbols obeys the same universal laws as the simple symbols. Thus the Postulate of Homogeneity is explicitly recognised.

There are *five* independent laws, which are necessary and sufficient for propositional synthesis. They are the following :—

I. The Commutative Law : $xy = yx.$
II. The Associative Law : $xy.z = x.yz.$
III. The Law of Tautology : $xx = x.$
IV. The Law of Reciprocity : $\bar{\bar{x}} = x.$
V. The Law of Dichotomy : $\bar{x} = \overline{xy}\ \overline{x\bar{y}}.$

A few words of explanation on each law may be given. But the whole of the explanation that follows is *totally unnecessary for the working of the calculus.* The calculus is only a calculus in so far as the meaning of the letters, of the bar, and of the synthesis of juxtaposition is temporarily forgotten. On the other hand, the remarks, which immediately preceded the enunciation of the laws, *must be understood.* I hope that I have succeeded in making clear the distinction between the minimum of intelligence that is absolutely necessary and the intelligence that is supposed to be laid aside in working the calculus.

§ 7. *Explanation of the Fundamental Laws.* The Commutative Law expresses the principle that *the order of pure synthesis is indifferent.* The *space-order* in which the symbols are written may be taken to indicate the *time-order* in which the corresponding judgments are formed. *Time* is a condition to which thinking is subject. This is a psychological law referring to the *process of thinking.* But the logical law states the principle that the *objects of thought* abstract from this condition under which thinking takes place, and are related to one another *timelessly.* Again, the Associative Law expresses the principle that *the mode of*

grouping in pure synthesis is indifferent. For it is to be observed that each step in the process of synthesising propositions involves *two* elements. This merely exhibits a psychological law of thinking, known as the Law of Duality. But the logical law here affirms that the objects of thought are not restricted in their inter-relations by any limitation to a Duality. Again, then, thought is seen to abstract from the conditions to which thinking is subject. The three remaining laws closely correspond to the three Laws of Thought recognised by Logicians. The first of these—the Law of Tautology—expresses the principle that *the mere repetition of a proposition does not in any way add to or alter its force.* The ordinary form of this law, "Every A is A," or "If A, then A," expresses the same principle. Having given the name A, or affirmed the proposition A, a mere repetition of such statement does not affect its assertory force.[1] The import of the judgment is independent of the time, circumstances, or connexions in which it is formed. Its repetition is, therefore, objectively irrelevant. The first three laws, then, form a group of principles which declare that thought is emancipated from the conditions imposed on the thinker. He forms a judgment once, and perhaps again forms the same judgment, or forms another and connects this with the first, and then again forms a third judgment, which he connects with the result of joining the first two. But all this time-process and time-sequence and time-repetition are irrelevant to the import of the objectified judgments. These are timeless, and related timelessly.

The Law of Reciprocity expresses the principle that *the denial of the denial of a proposition is equivalent to its affirmation.* In this principle are included the so-called Laws of Contradiction and Excluded Middle, *viz.*, "If A, then not not-A" and "If-not not-A, then A". Of course, here denial means *bare* denial or pure contradiction. If in opposition to A we set up some proposition merely incompatible with A, then the denial of this last does not bring us back to A. Other alternatives are possible. The formal contradictory of a positive judgment can never be itself a positive judgment. If the proposed contradictory has any positive element in it, the alternatives are only exhaustive within the positive hypothesis

[1] It should be observed that I distinguish this law of Tautology from the symbolic convention $a = a$. The latter is necessarily presupposed in order to give meaning to the former. The latter, again, is a conventional postulate, common to all symbolism; the former is a formal law, exclusively logical.

common to the two. The logical contradictory, therefore, is a mere ideal—never apprehended in itself—which serves as a warning against the error of supposing that any finite number of positive contraries can be exhaustive of all possibility.[1] The Laws of Contradiction and Excluded Middle have the appearance of being merely *verbal*. They seem simply to expound the meaning of *not*. It is, therefore, necessary to show how thought comes to have a meaning for *not*. We shall find the explanation by recurring once more to the process which ends in the formation of a judgment. In this process we detect a *conflict* ending in a *conquest and ejection*. Now the word *not* has really a double signification. Sometimes it refers to the *conflict*, and at other times to the *conquest and ejection*. The laws of Contradiction and Excluded Middle bring these two significations into connexion with one another. "If A, then not not-A" means "The positing of A involves a conquest over and rejection of anything that conflicts with A". The former "not" thus means "rejection of"; the latter means "conflicting with". Again, "If-not not-A, then A" means "The conquest over and rejection of everything that conflicts with A involves the instatement of A". As before, the former "not" means "rejection of," and the latter means "conflicting with". The former is the *not* of the *copula*, the latter of the *predicative term*. This explanation will, perhaps, make clearer the statement that the force of a declaration, assertion, or positing is made explicit by reference to denial; and the relation between the two—and thus the real import of a proposition—is finally made explicit by the laws of Contradiction and of Excluded Middle. The doubt, then, whether these laws are not after all merely verbal expositions of '*not*' is answered by the reflexion that, were there not any *real* psychological process at the back of the proposition, there would be nothing for '*not*' to mean. Granted the reality of the process, the laws may be admitted to be merely verbal. But the foundation of the verbal laws is just this reality of the process.

Lastly, the Law of Dichotomy expresses the principle that *the denial of any proposition is equivalent to the denial of its conjunction with any other proposition together with the denial of its conjunction with the contradictory of that other*

[1] I should maintain that the apparent ultimate antinomies of thought arise always from the attempt to conceive two alternatives by means of some positive idea. The Law of Excluded Middle is used to justify this attempt; but, in fact, it expressly forbids the attempt.

proposition. This is a further extension of the Law of Excluded Middle, when applied to the combination of propositions with one another. The denial that a is conjoined with b combined with the denial that a is conjoined with *not-b* is equivalent to the denial of a absolutely. For, if a were true, it must be conjoined either with b or with *not-b*. This law, which (it must be admitted) looks at first a little complicated, is the special instrument of the logical calculus. By its means we may always resolve a proposition into two determinants, or conversely we may compound certain pairs of determinants into a single proposition. In this law we first begin to see the complexity into which the development of our axioms will lead us. In a future paper I hope to show how the whole Boolian Calculus can be derived in a few steps from these laws. But at present I wish to examine more closely the relation between the methods of the calculus and the ordinary forms of speech and thought.

§ 8. *Derivative Modes of Synthesis.* All results attainable by the Logical Calculus are contained in the five fundamental laws which regulate the use of the particles "*and*," "*not*". But the results can be put into more familiar forms, and their relations to ordinary processes of thought can be exhibited by the introduction and definition of new conjunctions and modes of synthesis.

We may, then, observe first that we have two fundamental *types* of synthesis which can be best denoted by the words *Conjunctive* and *Disjunctive*. Thus, taking two simple propositions x, y, their conjunction is expressed by xy and their disjunction by $\overline{\bar{x}\bar{y}}$. These two propositions xy and $\overline{\bar{x}\bar{y}}$ form a contradictory pair. The conjunctive xy expresses that x and y are both true; while the disjunctive $\overline{\bar{x}\bar{y}}$ expresses that x and y are not both true.[1] The latter must of course be distinguished from the conjunctive $\bar{x}\bar{y}$, which expresses that x and y are both not true. Each of these types has *four varieties* involving x, y, or their contradictories, *viz.*:—

Conjunctives.	Disjunctives.
xy	$\overline{\bar{x}\bar{y}}$
$x\bar{y}$	$\overline{\bar{x}y}$
$\bar{x}y$	$\overline{x\bar{y}}$
$\bar{x}\bar{y}$	$\overline{xy}$

[1] The word *disjunctive* is here taken in its natural sense to mean "*dis*-joined," and in direct opposition to *conjunctive*.

The double use of negatives in the Disjunctive varieties is confusing to ordinary intelligence. Hence in popular speech they are expressed in simpler form. Thus the disjunctive $x\bar{y}$ is expressed in the *Hypothetical* form, 'if x, then y'. And the disjunctive $\bar{x}\bar{y}$ is expressed in the *Alternative* form, 'either x or y'. In this way ordinary speech dispenses with double negatives. We must add that in this view there is no essential difference in meaning between the Disjunctive, Hypothetical, and Alternative forms, and hence that any proposition of the Disjunctive Type can be expressed indifferently in four different forms. Thus, taking the second variety, the following four propositions are equivalent:—

(1) The conjunction of x-true with y-false is false.
(2) If x is true, y is true.
(3) If y is false, x is false.
(4) Either x is false or y is true.

Similarly each of the other varieties of Disjunctive can be expressed in four equivalent ways by use of the Disjunctive, Hypothetical, and Alternative forms. Moreover any proposition of the *disjunctive* type is contradicted by a proposition of the *conjunctive* type. Thus the contradictory of "If x, then y" is "x is true, but y is false"; the contradictory of "Either x or y is true" is "Neither x nor y is true," and so on.

It is not enough for my purpose to establish merely the *equivalence* of the Disjunctive, Alternative and Hypothetical forms. I would contend that the only *natural* way of expounding the force of the Alternative and Hypothetical forms is to reduce them to the Disjunctive form. The syntheses 'or' and 'if' have been recognised as presenting peculiar difficulties by all logicians who are inclined towards an *objective* interpretation of propositions. The fact or actuality cannot itself be hesitating between two alternatives. It cannot determine itself conditionally upon an undecided contingency. The fact must be a *determinate* fact. The relation between alternatives or between supposition and consequent cannot be a relation between facts. Hence the origin of these forms must be looked for in the nature of the thinker's relation to fact. Now this relation is clearly the relation of partial or incomplete *knowledge* (or at anyrate, more exactly, partial or incomplete *statement*) about facts. Now how is this partial knowledge or statement to be exactly described? Examine the common man and you will see how he would explain himself if pushed to extremities. He

will be obliged to explain that by saying that one or other of two alternatives is true he means that he will not admit that *both are false*. By saying that if one proposition be true another proposition would be true, he means that he will not admit that the *first can be true and the second false*. He thus recognises that the *conjunctive* combination of propositions is a real combination which has obvious objective import. There is, therefore, a meaning in denying or refusing to admit any conjunctive combination. The alternative or conditionally dependent relation cannot be conceived as objective; but the conjunctive or determinative relation has a clear objective meaning. If this be admitted, the real difficulty of interpreting Hypotheticals and Alternatives, as representing a phase or aspect of actual objective reality, is shifted to the primary difficulty of interpreting *denial* objectively. For it may be admitted that *conjunction* has a real objective import and yet maintained that a *denial* of conjunction (as indeed any denial) cannot be interpreted objectively. The difficulty, then, is reduced to the primary difficulty of giving objective import to the *negative*. Now the occasion of a man's forming a truly negative judgment with respect to reality is undoubtedly that the suggestion of the positive is rejected in the conflict by an antagonist who does not clearly show his face. The antagonist is in reality a *positive contrary*, not an indeterminate contradictory. It is only a positive that has the power to reject another positive. But that positive may evince its power without being discernible as a *determined* positive. Hence the occasion for a negative judgment. Thus the difficulty is solved by the acknowledgment that, while the judgment determines reality, yet it leaves reality partially undetermined; while reality is absolutely determinate, it is only as yet incompletely determined. But why need we have had recourse to the negative judgment to demonstrate this? Does not every positive judgment equally illustrate the same limitation in our apprehension of reality? We can never "speak *the whole* truth," even though we may swear that we speak "nothing *but* the truth". A proposition, positive or negative, can only select one from the infinite number of latent specifications of reality. It does not thereby affirm that it has exhausted every aspect of the real.

§ 9. *Discussion of the above Interpretations.* To some readers all this will appear both true and trite. Others, however, will strenuously oppose it. I do not think that any logician except Dr. Keynes has gone quite so far as I propose in the thorough-going identification of the Disjunctive, Hypo-

thetical, and Alternative mode of synthesis, and especially in the view that the Hypothetical is contradicted by a Conjunctive, though this view would seem to be the natural outcome of the symbolic systems elaborated by Mrs. Ladd Franklin and Mr. Mitchell in the Johns Hopkins *Studies in Logic*. The discussion of this view is necessary, because it throws some light on a good many controversies in Formal Logic. In debating the point, one has to face two very different classes of opponents: the thorough-going symbolists and the thorough-going conceptualists. In the first class I have specially in mind Dr. Venn, Mr. Peirce, and Mr. McColl. These three writers identify (for symbolic purposes) the implicational relation between two propositions with the relation between the subject-term and predicate-term of the universal categorical. The first objection to this on symbolic grounds is simply that the latter has a *quantitative* element which is altogether absent from the former. Thus the universal categorical, "All cases of A are cases of B," contemplates a number of different cases in which A or B may be found. Hence it is contradicted by the particular categorical, "Some cases of A are cases of not-B". But the hypothetical, implicational, or inferential synthesis, "If the proposition A is true, the proposition B is true," contemplates simply the single conjunction or disjunction of A with B. There is no differentiation of cases or times by which the propositions A and B can be said to be 'in some cases' or 'sometimes' true and 'in other cases' or 'at other times' false. The same proposition cannot be sometimes true and sometimes false![1] Hence the hypothetical which denies the conjunction of the truth of the antecedent with the falsity of the consequent is in its turn denied by simply *affirming* that conjunction absolutely, without distinction of where or when. Using Boole's symbols, it is clear that if x and y are propositions, $x = 0$ and $x\bar{y} = 0$ are contradicted respectively by $x = 1$ and $x\bar{y} = 1$. But, if x and y are class-terms, $x = 0$ and $x\bar{y} = 0$ are contradicted respectively by $x > 0$ and $x\bar{y} > 0$. There is no alternative between the truth or falsity of a proposition or a conjunction of propositions. But between the extension of a term throughout the whole universe and zero-extension, there lies the alternative of its extension throughout *a part*

[1] Those symbolists, who deny this, confuse the 'time during which a proposition is true' with the 'time to which the proposition explicitly or implicitly refers'. Propositions referring to different times are different propositions.

only of the universe. For the pure symbolist the matter may be clenched by the following observation. There *is* a thorough-going analogy between the combination of propositions and the combination of terms. But just as propositions are combined to form complex *propositions*, so terms are combined to form complex *terms*. Consider the combination of the propositions x, y, to form the complex propositions "If x, then y," *i.e.*, "y or $\bar{x}$". This is precisely analogous to the combination of the *class-terms* x, y, to form the complex class-term "class-y together with class-$\bar{x}$". The analogy is symbolically perfect. Yet the symbolists to whom I have referred appear to identify the latter complex class with the *proposition* that this complex class exhausts the universe. They actually confuse the *class* $y + \bar{x}$, with the *proposition* $y + \bar{x} = 1$.[1]

This error seems to be closely allied to and to have arisen from a confusion between two kinds of synthesis both of which are expressed ordinarily by the sign *if*: one of which contemplates a conjunction or disjunction of circumstances in the same case or cases of phenomena, and the other contemplates a conjunction or disjunction of two propositions of independent import. The first mode of synthesis I should propose to call *Conditional* and the second *Hypothetical*. [See Keynes's *Formal Logic*, 2nd edition, pp. 64, 65.] For example of the Conditional take, "If a child is spoilt, his parents suffer". Here the *import* of the apparent consequent is only to be explained by introducing bodily the whole of the apparent antecedent, so that the proposition is really equivalent to a *single* categorical, namely, "All the parents of spoilt children suffer". For example of the Hypothetical take, "If virtue is involuntary, so is vice". Here we have *two propositions* of independent import—'Virtue is involuntary,' 'Vice is involuntary'—which are so related that the first cannot be true without the second. In this latter instance we deny the conjunction of the *truth* of the antecedent with the *falsity* of the consequent once and for all *without distinction of case or time*. In the former we deny the conjunction of the *circumstances* expressed by the antecedent with the absence of the circumstances expressed by the consequent *for every case in the real universe contemplated*. The hypothetical is contradicted by the proposition, "Virtue is involuntary, but not so

[1] This confusion is due to the fact that, if x is a proposition, then the proposition $x = 1$ means neither more nor less than the proposition x. But, if x is a *class-term*, $x = 1$ differs from x *in toto*, inasmuch as the former is a *proposition* and the latter a mere *term*.

vice". The conditional is contradicted by the proposition, "Some of the parents of spoilt children do not suffer". The conditional form is chiefly used instead of the categorical, whenever the real subject-term is highly complex involving a chain of relations (as in the propositions of geometry).

In arguing with the symbolist—who attempts to identify two somewhat different forms of proposition—one has merely to point out (as I have done) that the rules of symbolic operation are actually different in the two cases which he proposes to identify. But, in arguing with the logician who adopts what may be called a conceptualist position, the matter is not so simple. In this case of Symbolism *versus* Conceptualism, the Symbolist wishes to unite or identify what the Conceptualist distinguishes. Now the distinctions which the Conceptualist urges are of the highest importance; the Symbolist has merely to take the modest ground that *his* symbols are quite incompetent to deal with these distinctions until they are explicitly formulated. In other words, the distinctions of the Conceptualist are material or non-formal to the rigidly formal logician.

The cases we have to consider here are (1) The identification of the Disjunctive, the Hypothetical, and the Alternative forms of Synthesis, and (2) The identification of the Conditional with the Categorical universal.

(1) The Hypothetical, "If a, then b," might apparently be written, "The proposition a implies the proposition b". Its contradictory would then appear to be, "The proposition a does *not* imply the proposition b". This latter would mean (I presume), "The proposition a might be true without the proposition b being true"; in other words, "The conjunction of a with not-b *may* be true". In *my* interpretation, on the other hand, the hypothetical, "If a, then b," means, "The conjunction of a with not-b is false," and its contradictory is therefore, "The conjunction of a with not-b is true". The difference between the two interpretations is, therefore, indicated by considering the contradictory of each, which gives in the one case the *possible* truth and in the other case the *actual* truth of a certain conjunctive. Now this is a difference of *modality*. There are great difficulties in coming to an agreement on the subject of modality. But perhaps the following will be admitted. Modality refers to the *grounds* on which the thinker forms his judgment. It, therefore, expresses a relation between the thinker on the one hand and a certain proposition on the other hand. The real *terms*, then, of the modal proposition are the thinker and his relation to some judgment which is propounded to him. Thus

the proposition, "S must be P," asserts (say) that, "Any rational being is bound by his rationality[1] to judge that S is P". Now the contradictory of a modal proposition such as "S must be P" is always another modal proposition such as "S may be not-P," which would mean on the above showing, "A rational being is *not* bound by his rationality to judge that S is P". The modal proposition is, therefore, simply an assertoric on a different plane—concerned with the relations between different sorts of terms. It follows, then, that whereas a modal must always be contradicted by a modal, an assertoric must always be contradicted by an assertoric. Now to return to the proposition, "If a then b," I propose simply to regard this as an *assertoric hypothetical*, not as a *modal hypothetical*. In other words, it is taken *to assert a relation* of disjunction between a and not-b, not *to assert the obligation to assert this relation*. This interpretation is only in conformity with that of the simple proposition, 'a is true,' which is regarded as an *assertoric* categorical, not a *modal* categorical; it asserts a, it does not assert *the obligation to assert* a; it is contradicted by 'a is false,' not by 'a may be false'. In justification of my interpretation, it is only necessary to urge that the ordinary use of "if" must at least *include* the affirmation of the disjunctive. Of course a speaker must have some grounds for his statement. But it is one thing to dispute the validity of his grounds and quite another thing to dispute his statement itself. Where the speaker intends primarily to assert his right to affirm the disjunction—not to assert the disjunction itself—this meaning has only to be made explicit, and the symbolist will be able to deal with it. But the change of meaning involves a reference to new *sorts of terms*, which cannot without confusion be mixed up with the old terms.

Very similar remarks must be made with respect to the identification of the Alternative with the Disjunctive.[2] The proposition "a or b" might be taken to mean "a and b are alternatives". Its denial would then appear to be "a and b are *not* alternatives". This again would mean (I presume) that "other alternatives besides a and b are possibly true," *i.e.*, that "It may be that a and b are both false". Now I

[1] Or it may be by his spatial or moral intuitions. In every branch of *necessary* thought, the necessity has a different foundation—so far as the *Logician* at least can see.

[2] The reader will, of course, observe that I am not exactly following the common use of the word Disjunctive. The word, as originally applied to 'a or b,' implied the disjunction of a with b. I am identifying 'a or b' with the disjunction of $\bar{a}$ with $\bar{b}$.

regard the contradictory as being simply assertoric instead of modal, *viz.*, "*a* and *b are* both false". This is of course in accordance with common language: "Either-or" is naturally contradicted by "Neither-nor".

Considering, then, both the Hypothetical and the Alternative forms of proposition, I admit that the *psychological occasion* for these judgments is a certain relation in which the thinker stands to reality. But I do *not* admit that the force of the propositions is to *affirm* this relation. On the contrary, they must be taken as affirming assertorically a fact, which is within certain limits left *undetermined* in the judgment.

(2) I should wish to identify the conditional proposition, "If *any* subject is S, *that* subject is P," with the categorical proposition, "Any or every subject which is S is P," and this again with the ordinary form, "Every S is P". It has been frequently pointed out that the mental attitude involved in these two forms is different. But we must distinguish in Logic the mental attitude from the objective significance of a judgment. Logic is wholly concerned with the latter. If a mental attitude is intended to be *affirmed*, language is capable of doing this explicitly; and the new terms in which this new proposition is couched can be dealt with by formal logic as easily as the old. Other logicians would rather detect an *objective* distinction between the above two forms. But however this objective distinction is expounded, it is clear that new terms will have again to be introduced. Some, *e.g.*, might say the conditional means "it lies in the character of S that P is inseparable from everything that partakes in it". [Lotze.] Now as pleading on behalf of a rigidly formal logic, may I point out the obvious fact, that in this proposition we have an entirely new complex of terms? It is not in the spirit of underrating the importance of such immensely interesting work as Lotze has performed in the Philosophy of Logic that I offer such an obvious reply. My object is rather to magnify the interest and importance of his and similar work, by markedly separating it from the dry and narrow field of Pure Logic. Even in this field there seems to me useful work to be done—not without its own interest. With respect to the particular point in question, I must urge that if the Aristotelian doctrine of syllogism is of any value, it gains its end entirely by the suppression of all distinctions that are not explicitly recognised in its S's and P's. Its universal applicability is only attained by demanding that *implicit* distinctions shall be voted out as *non-formal*.

§ 10. *The Definite Introduction of Various Conjunctions or Modes of Synthesis.* Though the calculus can be completely developed by use only of the particles *not* and *and*, yet the results in this form would appear strangely complicated and foreign to common speech. Hence it is desirable to introduce other modes of synthesis. The most convenient synthesis to introduce is the Alternative, indicated by the word '*or*'. I have urged that 'or' is most naturally interpreted in terms of 'and' and 'not'. Hence the equivalence: 'a or b' means not ($\bar{a}$ and $\bar{b}$). This is, of course, a mere verbal or conventional equivalence—*not a fresh formal law.* From the definition follows the reciprocal relation between *and* and *or* which has been so fully worked out by Peirce and Schröder. It is legitimate, though of course not necessary, to include further the symbol *if*. This, again, can be most simply defined as equivalent to *or-not*. Thus 'a if b' means 'a or $\bar{b}$'. This is another conventional equivalence. This definition suggests further the conjunction *without*, which is defined as meaning *and-not*. Thus 'a without b' means 'a but not b,' *i.e.*, 'a and $\bar{b}$'.

The two conjunctions "*and*," "*or*," were represented in Boole's system by the mathematical symbols of multiplication and addition respectively. The words "*if*" and "*without*" correspond respectively to *division* and *subtraction*, if we eliminate the uninterpretable and indeterminate character which Boole gave to the processes. The common words *or*, *without*, *and*, *if* thus happen to have some analogies with the four fundamental processes of arithmetic. The analogies are, however, far from perfect; and the only legitimate ground for using Arithmetical symbols is that we are thus saved the trouble of learning to work with an entirely new set of symbols. If Boole had not taken advantage of this analogy, his system would never have taken the hold that it actually has. But his procedure was in one respect unfortunate. He started with *algebraical* formulæ, and then investigated whether these could be interpreted logically. He ought to have started with the logical formulæ, and then, if desirable, to have examined whether it was convenient that these should be represented by *algebraical symbols.* However, this error has been amply remedied in the writings of Dr. Venn. The question may still be asked, whether the continued use of Algebraical symbols is necessary or desirable? I hope to show in a future paper that these symbols are on the whole rather an encumbrance than otherwise. I think that they may be used in a modified form by the *beginner* in logical manipulation; and that they should be discarded later.

This conclusion is partly based on the definite ground that since our logical system treats *and* and *or* as reciprocally related, it is peculiarly inappropriate to represent these by $\times$ and $+$ respectively, which are *not* reciprocally related.[1]

But a stronger reason is that the plan of notation, which I hope to expound, actually enables us to solve more directly and immediately certain problems, which have not at present been easily solved. If this is admitted, it will appear perfectly feasible to drop all mathematical symbols in dealing with complex logical problems. This has of course been done by Dr. Keynes, though he has not exactly developed his method into a symbolic calculus. What distinguishes such a calculus is the application of given definite laws of combination to results of any degree of complexity, without any other recourse to intelligent perception of the process than is involved in the necessary postulates of *all* calculuses. The derivation of complex results from highly simple formulæ of combination has been so nearly exclusively the mark of mathematics, that critics are inclined to disparage the method on the ground that it degrades logic to the position of a mere branch of mathematics. But the *method* is not *in itself* mathematical. Its so-called mathematical character is neither enhanced by the use of mathematical symbols nor diminished by their avoidance. The method is simply the method of *non-intelligent combination*. And on this ground only can it be applauded or condemned.

§ 11. *The Primary Analysis of Propositions.* The letter-symbols that are used in the foregoing calculus stand for *unanalysed* propositions. The synthesis hitherto considered is a synthesis of *propositions* into more complex propositions. Propositions combined into a system of propositions have the same properties as the simple propositions out of which they are constituted. We must now analyse the proposition into elements which are not themselves propositions, and examine what further developments arise in the synthesis of propositions from a consideration of this analysis. Here we must start with that form of proposition which cannot be resolved into more elementary propositions. Such a proposition may be called an Individual, Indivisible, or Molecular Proposition. The Molecular Proposition can only be conceived as an ideal limit, for any actual proposition is potentially resolvable into an indefinite synthesis of more elementary propositions.

[1] This contention does not, of course, apply to Dr. Venn's system, in which the two operations are *not* reciprocal.

The molecular proposition is found, on a first analysis, to contain two sorts of elements—a singular substantive and a finite verb. The former is the *subject-term* and the latter the *predicative-term*. These are the *atoms* whose combination constitutes the *molecular* proposition. The usual logical analysis of the predicative-term into *copula* and *predicate-term* is not fundamental and is in some respects particularly misleading. This analysis is generally, in fact, a merely *verbal* device, having no logical significance. For consider the proposition, "Socrates is mortal". Here we predicate *mortality*. If we interpret the predicate-term *mortal*, we should say it is a name given to any individual of whom mortality can be *predicated*. The substantive general name 'a mortal' is only definable by means of the conception of predication. By the device of introducing the name 'a mortal,' we do not at all obviate the necessity of marking the peculiar relation in which the predication stands to the subject. It is true that, starting with the conception of 'dying,' we may proceed to form the conception of the class of individuals which contains all who must die and none others. But this class is defined by means of predication thus: "Whoever must die". It is obviously circuitous to interpret the proposition, "Socrates must die," to mean, "Socrates is-identical-with one or other of those who must die". Besides, we do not in this way get rid of the peculiar predicative element. For this comes up again in the definition of our predicate name. To attempt to do this would involve an infinite process of substitution. "Socrates is-identical-with one or other of those who are-identical-with one or other of those who," &c., &c. It is, therefore, a mistake to suppose that the 'identity' or 'class-inclusion' interpretation of such propositions, which is perfectly legitimate in its proper place, enables us to get rid of the *predicative* element, which is essential to the proposition. There is one case, no doubt, in which the copula has a real logical significance, *viz.*, in such propositions as, 'Tully is Cicero,' 'Courage is Valour'. For here we have two real subject-terms, and the copula relates them as *identical*. Here "is" is a *relative predication*. The propositions are logically on a level with "Brutus loves Cæsar," "Red resembles purple". But these propositions really help to prove my contention. For the explanation of "Tully is Cicero" would be "Tully *is* identical with Cicero". Here the word "*is*" has fallen into the position of a mere verbal device, and we see that what we predicate of Tully is "identity with Cicero".

All that I wish to contend for here is that subject and predication are logically distinct categories; and that the

device of resolving predication into copula and predicate-name tends to obliterate the distinction. For the purposes of Formal Logic, there is one consideration which will establish this point. With respect to any subject whatever there must be *some* predications which can be joined with it, so that if some are denied, there must be others which can be affirmed of it. But we cannot say conversely, with respect to any predication whatever, that there must be *some* subjects with which it can be joined. Hence, after denying it of some subjects, there may be no other subjects of which it may be affirmed. A subject is that of which something must be predicable. But a predication is not necessarily predicable of some subject. Hence the subject cannot be regarded as a blank form; it must be filled with predications, determined or as yet undetermined by thought. On the other hand, a predication may exist in its own peculiar realm without ever being found to attach itself to any subject. The realm of predications and the realm of subjects are not, therefore, precisely analogous. The former may exist without the latter, but not conversely.

This distinction is embodied in the common mode of denying a proposition. In order to contradict a predication with respect to a subject, we allow ourselves to affirm of that subject what we call the contradictory predication. This contradictory predication is of course *indeterminate*. But, in retaining the same subject, and affirming something of it, we imply that it could not *be* a subject unless something could be predicated of it. Hence the negation of a *proposition* attaches itself to the *predication*. If we attached negation to the subject, it would be because, in denying a predication to one subject, we assumed that there must be some other subject to which the predication could be attached. We deny the proposition, "Socrates must die," by affirming at least that "there is something other than death which is predicable of Socrates," not by affirming that "there is something other than Socrates of which death is predicable".

The 'existence' of a subject is then a presupposition of significant judgment. Also a 'meaning' to predication is a presupposition. But the two are not parallel. The subject *is* a subject, in so far as something is predicable of it. But a predication does not lose its meaning, because there is no subject of which it may be predicated. Having then granted the reality of subjects and of predications, we may proceed to give *names* which stand for one or other of these subjects or predications. These names *refer directly* to their objects. Hence they necessarily have *application*. Names which refer

directly to their objects may be called *purely denotative* names. To a purely denotative single name, then, there always belongs a corresponding subject or predication to which the name applies. The application of the name is to *one*—neither more nor less—namable object, whether this be subject or predication. The *existence* of the subject and the *meaning* of the predication, here, answer to the *application* of the subject-name or predication-name.

§ 12. *Synthesis of Propositions as Modified by their Analysis.* We may first consider the synthesis of propositions *containing a common individual denotative subject-name.* Here in accordance with the mode of denoting the contradictory of a molecular proposition by contradicting the *predication*, we also represent the synthesis of propositions containing the same subject by a synthesis of *predications.* We thus apply the laws and derivative rules for the combination of unanalysed propositions to the combination of predications of a common subject. Nothing further need be said on this point.

We have next to consider the synthesis of singular propositions, *containing a common predication*, but different subjects. Let S_1, S_2, S_3 . . . S_∞ represent a number of different individual subjects; and let p denote any predication. [It will be convenient in order to distinguish the predication from the subject to write the predication in the usual form "is p".] A term S may be used to represent the aggregate collection of individuals S_1, S_2, S_3 . . . S_∞; *i.e.*:—

S means "S_1 with S_2 with S_3 . . . with S_∞".

Now there are two fundamental forms of synthesis which we have noted, *viz.*, "*and*," "*or*". These lead to the familiar abbreviations:—

S_1 and S_2 and S_3 . . . and S_∞ = Every S:
S_1 or S_2 or S_3 . . . or S_∞ = Some S.

Thus we arrive at the common logical forms, Every S is p, Some S is p. The former is an abbreviation for a *determinative*, the latter for an *alternative* synthesis of molecular propositions. The rules, then, for the synthesis of propositions may be applied to derive the relations between universal and particular propositions. These relations all follow from the consideration of the implied '*and*' and '*or*' which are latent in the quantitative terms '*all*' and '*some*'.

We have, thirdly, to consider the synthesis of propositions, which refer *to the same aggregate of subjects*, but contain different predications. This yields six cases, according as we have a determinative or alternative synthesis of two

universals, or of two particulars, or of a universal and particular. The results are all derivable from the analysis of the universal and particular, as condensed forms of *and* and *or* respectively. The following are the chief results to notice:—

Every S is p and Every S is q = Every S is p and q.

This follows at once from the consideration that, in the given compound, no mode of synthesis is involved except *determination*. Hence the commutative and associative laws immediately justify the equivalence. Similarly:—

Some S is p or Some S is q = Some S is p or q.

This follows from the same laws applied to *alternation*. But we must observe that in the other cases no *equivalence* is possible. Thus we have:—

Every S is p or Every S is q *implies*[1] Every S is p or q.
Some S is p and Some S is q *is implied by* Some S is p and q
Some S is p and Every S is q *implies* Some S is p and q.
Every S is p or Some S is q *is implied by* Every S is p or q.

These obvious results are shown to be derivable from the analysis we have given. The cases of *determinative* combination of two propositions correspond to the ordinary combination of premisses in the Syllogism, while the *alternative* combinations are represented ordinarily in Hypothetical Propositions (for *or* means *if-not*). The results lead to some important criticisms of the systems of other symbolists, which must be for the present postponed.

§ 13. *The Calculus of Multiple Quantifications.* We have now traversed the entire ground of ordinary formal logic. But our treatment will not be complete without a consideration of the so-called *Logic of Relatives*. This term is peculiarly misleading. No Formal Logic really treats of Relatives in general *quâ* Relatives. It can manipulate complex propositions involving a double, triple, quadruple, &c., *quantification*. And it is this manipulation to which the name *Logic of Relatives* has been unfortunately applied. By *quantification*, I mean the use of such terms as *All, Some*. By a proposition involving multiple quantification, I mean such a proposition as "*All* readers find *something* to enjoy in *any* volume

[1] "Implies" here means "formally implies," *i.e.*, "contains as a *determinant*". Formal inference is, in fact, nothing but *discovering the determinants* of a given complex. The relations between *formal* equivalence, implication, or contradiction, and *material* equivalence, implication, or contradiction, will be treated in my next paper.

written by *a* true poet". This involves a *quadruple* quantification. The main ground of interest in the subject is that its treatment will conclusively show that the only instruments in the hands of the formal logician are pure synthesis and pure negation. For we have already observed that "all" is a mere abbreviation for "and"; that "some" is a mere abbreviation for "or"; and that "*a* or *b*" merely means "not (not-*a* and not-*b*)". When the needful analysis of a proposition involving multiple quantification is made we shall then see that the resulting calculus is merely a complex derivation from the five fundamental laws of propositional synthesis given above.

In the primary analysis of the proposition, we employ a *single* subject-term and a predicative-term to represent the molecular proposition; as in "Cæsar sleeps". But a further analysis may disclose a *double* subject. Thus "Cæsar loves Brutus" contains the two subjects *Cæsar* and *Brutus* and the relative predication-term *loves*. Considering, then, two groups of subjects $x_1, x_2 \ldots x_\infty$ and $y_1, y_2 \ldots y_\infty$, we have six cases of doubly-quantitative propositions. These correspond to the six cases of combination of two *singly-quantitative* propositions. For we may take all the molecular propositions of the form "x loves y," and combine them determinatively or alternatively with respect to the x's and with respect to the y's. We thus obtain the forms:—

I. Every x loves every y.
II. Certain x's love every y.
III. Every x loves certain y's.
IV. Some x or other loves every y.
V. Every x loves some y or other.
VI. Some x loves some y.

The distinction between II. and IV. and also between III. and V. has to be carefully noted. These forms involve the same modes of synthesis of the same elements, but *differently bracketed*. The word "Certain" is equivalent to "Some the same"; the expression "Some or other" is equivalent to "Some it may be different".

These propositions, and others similar to these, but of any higher order of multiple quantification, only require a careful analysis as regards the way in which the "*and*" and "*or*" syntheses are introduced. Under this treatment, the results will again be seen to be mere complex developments of the five fundamental laws of propositional synthesis. I hope to be able to exhibit the calculus of multiple quantifications in

a future paper. In the present article, I must return to a consideration of certain possible criticisms.

§ 14. *Criticism of the Preceding Analysis.* If the above analysis is admitted to be correct, it will establish the point that all the familiar methods of Formal Logic, and the less familiar results of Relative Logic, depend, not on the peculiar relation of subject and predication, but on the propositional synthesis involved in the *quantitative* element of the universal or particular judgment.

To all this the objection will be raised that it treats the universal and particular as merely *enumerative* forms, and entirely neglects the essential difference between a mere enumeration of single cases and the true universal which is controlled by a common nature or limited by the possession of a common attribute. It is true that this distinction is partially disregarded, but only in so far as it is irrelevant to the interpretational force of the universal. However the aggregate of things, to which the universal name applies, is mentally reached, the propositional force for purposes of inference or synthesis in general is the same. Just as we may measure the length of a curve by integration of small elements, although it is intuitively apprehended or analytically defined as a whole, so we may estimate the inferential import of a universal by regarding it as a synthesis of individual propositions, although the individuals are first determined by the conception of the universal in its oneness.

A further consideration of the import of ordinary quantitative propositions will provide us with a more complete defence. It is true that the quantified subject-term is not usually a mere enumeration of individuals first apprehended and named. But this is because the subject-term is not a *bare* subject, but a term having predicative as well as substantive force. Thus the proposition "All mortals must suffer" involves two predicative elements—dying and suffering. It asserts some sort of synthesis of these two predications within the same subject or subjects. The apparent subject is "Whatever dies". What then is the real or ultimate subject? It is certain that predication cannot *by itself* determine a subject. The application of the term 'mortal' cannot be evolved from the attribute 'mortality'. In common logical language, the denotation must be fixed and limited by something independent of the connotation. That which fixes all denotations is simply *the aggregate of all individual subjects*, the presupposition of which we have seen to be necessary for significant judgment. These subjects

can never be exhaustively characterised by means of predications. There remains always the stuff, substance, or matter on which the predications must hang. What are the boundaries of the 'universe of discourse'; whether these boundaries are uniformly the same in all 'discourses' or differ for every 'discourse'; are questions irrelevant to Formal Logic. It is enough to point out that there can be no such thing as a specific *denotation* of terms, unless there is some aggregate of individuals in the background ready to receive the connotation. With this understanding then we may resolve the apparent subject into its really substantive and predicative elements. The proposition "All mortals suffer" thus becomes "Any subject suffers if mortal". Here the ultimate subject is referred to universally; and the predication 'suffers if mortal' involves a complex synthesis of predications. The other cases are similarly treated. Thus—

Every x is y	= Every subject is 'x if y'
	= Every subject is 'x or $\bar{y}$'.
No x is y	= No subject is 'x and y'.
Some x is y	= Some subject is 'x and y'.
Not-every x is y	= Not-every subject is 'x if y'
	= Not-every subject is 'x or $\bar{y}$'.

All propositions, then, involving predicative subjects may be resolved into propositions having, as common subject-term, the aggregate of all individual subjects; and as predicate, a synthesis of the predications involved in the apparent subject and predicate. This result follows from the necessary reference of the subject-term to *denotation*. It is clear that, without a reference to a *common* aggregate of subjects, propositions could not be synthesised at all. The ultimate subject-term is referred to either *universally* or *particularly*. Hence the force of the proposition is brought out (as before) by interpreting the *universal* as an abridged *determinative* synthesis and the particular as an abridged *alternative* synthesis.

This interpretation of the universal and particular corresponds exactly to the interpretation given by Dr. Venn and Mr. Peirce and worked out by Dr. Keynes. In order to obviate certain objections that have been raised to their methods and also to show the closeness of the proposed interpretation to that ordinarily given, I have preferred to use the term 'denotation' in place of 'existence,' and to state the propositions with the same *signs of quantity*

that they originally contained. But my procedure is essentially the same as theirs. In the interpretation given of "all x is y," I have *not* assumed that x has any denotation, *i.e.*, the extension of x may be zero. If, in any given case, x is known to have extension greater than zero, the scheme of interpretation is perfectly adapted to express this additional datum. We have merely to conjoin with the negative proposition "Nothing is $x\bar{y}$" the affirmative "Something is x". A proposition is not reduced to insignificance by allowing the possibility that a *connotative* term such as "Any subject of which x may be predicated" has extension zero. This is quite consistent with my former statements that a *purely* denotative term must have extension greater than zero, and that the universe of denotation must itself have extension greater than zero.

[The statement (on p. 13) that "The same proposition cannot be sometimes true and sometimes false" must be taken in connexion with my recognition of propositions involving multiple quantification. Thus we may indicate a series of propositions involving single, double, triple . . . quantification, which may reach any order of multiplicity: (1) All luxuries are taxed. (2) In some countries all luxuries are taxed; or, In those countries in which all necessaries can be produced, all luxuries are taxed. (3) At some periods it is true that in all countries all luxuries are taxed; or, In all countries, at those periods at which some necessaries can be produced, all luxuries are taxed. With respect to each of the types of proposition (1), (2), (3), I contend that, when made explicit with respect to time or place, &c., it is absurd to speak of them as sometimes true and sometimes false. And I maintain also that symbolists are wrong in giving a unique place to *time* as a secondary differentiation of propositions. The rules for dealing with multiple quantification are precisely identical, whether the secondary quantification relates to time, place or any other substantive category.]

III.—THE IDEA OF VALUE.

By S. Alexander.

Among the judgments which we pronounce concerning things there is a well-marked distinction of two kinds. The one kind consists of bare statements of fact—such as, "The rose is red," or, "Balbus is building a wall". These may refer either to external objects or to internal states of mind. The proposition "The tree is green" describes a fact of external nature; the proposition "I am cold" describes a mental fact. Some psychologists would not admit that the two propositions are comparable; but however much they may differ in character, they may be joined together in distinction from a second kind of judgment. This second class consists of moral and æsthetical judgments and of propositions which do not merely imply but assert truth or untruth. Such judgments seem to consist of two: they not only assert a matter of fact, but they go on to assert something of this matter of fact. They apply to it a certain measure or rule, called goodness, or beauty, or truth, as the case may be. They are judgments in a different or rather in a more complex sense than that in which the other kind of judgments are; for they are not merely expressed as propositions, but they imply that something has been put on its trial and judged. They contain the sentence of the judge, whereas the others contain only the report of the jury. The jury have to decide if a man has committed a fraud; the judge thereupon condemns or acquits. We cannot evade the ambiguity of the word "judgment" in English, for the word "sentence," which describes the decision of the judge, describes also the proposition as expressed in language. The ambiguity is not without obvious reasons; for the words "judgment" and "sentence" have been taken by logicians and grammarians from their popular use in law, and applied to technical purposes. It is of far greater practical importance to have a name for the way in which we express approbation and disapprobation in all their various forms, than to have a name for bare statements of fact, and the use of judgment as equivalent to the sentence of the judge is therefore the first in time in popular language. We may call the second class of judgments "normative judgments," because they apply a norm or standard, or "judgments of value,"

because they declare something to possess value from the point of view of truth, beauty or goodness. The German language, so well adapted for expressing reflective distinctions, hits off the difference of the two kinds of judgments by calling the first set " Urtheile " or judgments in general, the second " Beurtheilungen " ; the distinction in this form has been current in German thought from the time of Herbart.

It is in this sense of judgment that I propose to deal with the subject in this paper—to inquire what value means and upon what it is founded. For the economist value has a very definite significance—the value of a commodity is the quantity of other commodities which the first can procure. The economist is well aware that the economic value of an object is in no way identical with the value which a moralist or an artist may set upon it, though he is equally aware that the economic value of an object, being dependent partly on demand, is affected by every moral and æsthetic consideration which affects the desires of persons to possess the object. There would seem at first sight to be only a superficial connexion between value in economics and value in morals or æsthetics or in respect of truth. Of economic value there is a common measure in certain specific commodities—the precious metals, which form the standard of price. There is also a currency in which the other kinds of value are measured, and this currency is one in which three standards are legal tender. For truth, goodness and beauty all three seem closely to cohere, and attributes are transferred from one standard to the other with the utmost freedom. At one time, as in Greece, the beauty-standard is the superior, at another time, goodness. But there is this difference between economic value and what we may call philosophic value, that value in economics has degrees, whereas here it seems to have none. We do not call an ugly thing less beautiful, we declare it not to possess beauty at all; we do not call a bad action an inferior kind of good action, we reject it as of a different character altogether, as having no community with goodness ; we do not recognise degrees of truth, but declare what is true to be utterly alien to the false. When we do make such distinctions of degree, we do so for various reasons, either to indicate that the thing in question contains elements which in themselves or out of their present surroundings have value ; or we do so in order to mitigate the severity of our censure, as when from dislike to condemn an action off-hand we declare it to be not so good as it might have been. And yet it may be doubted whether

"philosophic" value has not after all a closer relation with economic value than might be supposed. The economic value of a thing is fixed by answering a question of this kind: "Is this thing worth the money that is asked for it?" or (if we put money out of the question): "Is it worth the amount of things demanded in exchange for it?" This is tantamount to asking, "Are the desires of buyers such as to induce them to accept the object (and gratify at the same time the desires of the seller) at the price which is set upon it?" The "state of the market" means, "We will buy such and such objects at such and such a price; different objects, or these objects at different prices, we will have nothing of". Now this is precisely what the moral judgment says; the moral law says, that human beings will have only such and such actions, performed with such and such frequency and with such and such intensity; actions other than these are bad. In other words, economic value represents, and embodies in a particular form, the exchange of desires for material things: now, it may be maintained, and it will be maintained here that moral and other ideals represent equally an exchange as between many persons; though not an exchange of desires for material things, yet still an exchange of mental requirements; and the standards of truth, beauty and goodness in their different ways represent the different methods of effecting the exchange.

In what follows I shall principally speak of moral value, and of the other kinds of value, æsthetic and scientific, only incidentally and by way of illustration. The exact relations of the three are a difficult matter; but any one who has reflected on the subject knows well that all the problems which occur in one sphere occur with the necessary variations in the other. As my object is to deal with the conception of value in itself, it would be mere repetition to verify statements in all the three possible directions. I confine myself, therefore, to that with which I am most familiar.

What then is value? We began with the distinction between judgments of fact and judgments of value. Is this distinction a final one? That it is final is the belief of a large number of thinkers. "In morals," they say, "we deal not with what is, but what ought to be; not with events, but with commands which are binding upon events; not with the indicative, but with the imperative mood. We cannot step from the one region into the other. In morals we deal with ideals, but ideals hold up a standard to which facts must be made to conform, and they are not in them-

selves facts." Let us look at some of the various forms which this distinction has assumed. It is implied in the ordinary intuitionist theory that we possess a faculty of deciding the moral value of a proposed action which is independent of our other faculties and is in no way derived from them. This is combined with the belief that moral judgments have no connexion direct or indirect with contemplation of the consequences of action. From any such purely intuitionist view we have carefully to separate a seemingly intuitionist theory like that of Hume, which also asserts the existence of a moral sense, but at the same time declares this moral sense to be determined by a general view of the nature and effects of the action. No one, not the most hardened hedonist, has ever doubted the existence of a moral sense. The only question which has to be solved is the question whether this feeling is an abstract and brief chronicle of many simpler sentiments or whether it is something unique and inexplicable and is concerned with an object out of line with other objects of experience.

Intuitionism is not, however, the shape in which the contrast of "ought" and "is," of "ideal" and "fact" is most startling, nor is it the theory with which any exposition at the present time has most need to settle its account. In the theory of Kant the contrast was marked in the sharpest outlines, and from him it has been inherited by a large and influential body of thought in England. With Kant the moral law was above sense. It proceeded from man in his rational character, as member of an intelligible kingdom, subject only to the universal laws of reason. It must be obeyed by him in his empirical character, and therefore it presents itself to him as an imperative, but one which he sets to himself. It borrows nothing from the sensuous elements of his nature, which it rather humiliates than seeks to satisfy. It is not contrary to nature, but in so far as it takes up its sensuous material from human nature it has none of the marks of morality as such,—it has not the freedom, and with it the universality which belong to the moral law. Only in God is the union of sensuous perfection and rational perfection, without stress or strain, effected. In this famous theory to which no short summary can do justice, because any such summary must appear to pass over the permanent elements of value in the theory, "sollen" and "seyn" stand confronting each other. They react upon each other, but they exclude each other. And every one who has kept himself abreast of recent ethical writing in England knows how, with all its rejection of Kant's cold and

exaggerated formality, this cardinal distinction remains: how something in the mind different from its ordinary operations of sense, imagination, and the like is thought to remain which gives foundation to the ideas of a "truth" or a "goodness" (an "ought") not to be explained as the complicated result of simpler mental operations.

Before proceeding to the main argument, let us mention another theory which seems to retain the same distinction in principle, while it combines the merits of both the Kantian and the intuitionist views. Perhaps no modern philosophy is more interesting in itself or more important in its consequences than the Herbartian; and the Herbartian ethics, however untenable, are full of instruction. Herbart and his followers assert the existence of a class of feelings called "formal" feelings, the characteristic of which is that their object is some purely formal disposition of objects. Such feelings are (to take examples which are given by Professor Steinthal), the pleasure which arises from the mere metrical arrangement of a hexameter, from the mere contemplation of the so-called golden section of a line, from the arrangement of tones in a melody. These feelings are not excited by the sounds themselves or by the different parts of the line; they have nothing in common with the ordinary feelings of anger or joy. They are directed upon the relations which subsist between the lines and the tones or, more exactly, upon the pure form of this relation. As such they are not merely subjective feelings, not mere sensuous affections of the individual mind, they are objective, are directed upon something objective and have a universal value. Such are the æsthetic feelings and the feelings for truth, and such also are the moral feelings. There are certain relations between the parts of human conduct or relations of will which excite an immediate pleasure or displeasure. These relations are drawn out in the Herbartian system. They are called *Ideas* and are the standards of moral judgment. Such are, for instance, the Idea of Personality, the formula of which is that an action, which a man adopts solely on the strength of his moral *insight*, pleases; or the Idea of Harmony, according to which an individual will in agreement with the general will pleases immediately; or the Idea of Good-will; or of Right; or of Perfection. The vast superiority of this theory to that of intuitionism is apparent at a glance. But the reason for alluding to the theory here is that under the peculiar form of asserting the existence of a special kind of feeling—feelings of formal relations—it also asserts the opposition of what is ideal and ought to be, as

something universal and absolute, to other facts of mind or nature.

Such then are some of the forms which the supposed cardinal distinction of fact and value, of "ought" and "is," has assumed. That this distinction is a real one is one of the prejudices which testify how powerful is the effect of practical considerations in perverting scientific ideas. It is of the utmost importance for human welfare to insist on the sanctity of moral laws. However human institutions may change, however much our ideas of what is right may undergo modification or even revolution, to violate those standards is sacrilege. Yet their paramount importance does not imply that their authority is unique, and derived from other sources than the commonest facts of human life. But this confusion of the practically invaluable with the theoretically unique is the confusion which is committed by those who maintain that the distinction of fact and value is *ultimate*. The last words ("is ultimate") are chosen advisedly. That there is such a distinction is a truth which is as obvious as the truth that apples and roses are different plants. But as this last truth is compatible with the truth that both apples and roses share in one common type, so is the distinction of fact and value compatible with the proposition that value is only a particular kind of fact, a fact of a higher order, but essentially a thing natural, and in direct continuity with all other facts. There are two dangers to which the mind is liable in scientific and especially in philosophic inquiry. One is that which arises from what Bacon described as the too great *aequalitas* of the mind, the spirit which overlooks the patent distinctions of things, and merges their individuality in one sweeping and vague generalisation. Seeing that this gift for perceiving resemblances is the mainspring of all comprehensive thinking, those who do not avoid this danger may well be forgiven because they loved much. The opposite danger is that of hardening the flexible junctures of things, of digging ditches where nature has drawn thin lines, of painting in sharply contrasted colours when in reality one colour shades off by gradations into another. This is the spirit which loves discontinuity, which imagines that the cousinship of the more highly and less highly developed forms reduces both to the same low level of development. Paradoxically enough, this spirit often arises from an imperfect success in comprehending the whole of a subject at once, and hence it is often found combined with vague and unfruitful generalisation. Such appears to be the case with the theory that fact and value

stand upon different levels and are incommensurable. Though the chief cause of this illusion is to be found in the obfuscation of the intellect with the dust which is raised by practical interests, yet part of the blame is due to the fact that no attempt is made to discover what value itself is. That value exists is certain; that the value of an act is different from the act itself is also certain; but to assert on the ground of this that value has a place to itself as something unique is to fail in seeing the connexion of value with other facts of the world.

Some of the difficulty might have been avoided in morals if art and science had been taken into consideration as well. It is easy to maintain that the feelings which act as arbiters in moral decision are unlike all other feelings; but no one doubts that beauty at least is apprehended in the form of the pleasure which the mind takes in contemplating certain colours or sounds or other sensuous forms. But here again it may be answered, and from Plato onwards this view has been reiterated, that the beautiful is a sensuous embodiment of something ideal, or rational. Or that truth is the approximation of human knowledge to an *ideal* of knowledge, or perhaps to the ideal constitution of things. In like manner in morals our judgments have reference to ideals. When we pronounce an act to be good we mean that such and such an act accords with the ideal of action. And how can such a standard be reduced to the level of such facts as those with which the psychologist deals?

The answer to this is very simple. Ideals are nothing but the formulations of desires. The moral ideal is a very complex and highly organised system of such objects of desire. Morality consists of certain observances or conduct upon which the men called good are agreed, or on which men are agreed so far as they are good men.[1] It represents the different directions in which the energies of different members of a society must be expended in order to work smoothly in connexion one with the other. The moral order is in its essence something social and implies the co-operation of the individuals who compose a society.

[1] I may as well at once obviate any verbal objection which might be raised on the ground of the inconsistency with which I speak of the ideal sometimes as a formulation of desires, sometimes as the object of desires, sometimes as a mass of sentiments. The ideal is a kind of character, or a number of modes of conduct, and may properly be designated therefore as a mass of sentiments or desires, which make up the character and compel to the conduct. Any man who possesses the ideal makes the character or conduct so described his object.

They bring to it from their birth and from their training certain personal endowments, whether mean or excellent, gifts of body and of intellect or feeling, gifts of fortune, and gifts of opportunity. As so endowed, they enter into the social life with forces or weaknesses, which at every turn come into contact with the forces or weaknesses of other individuals. The result is a compromise, which determines not only what powers must be exercised, on what occasions, but also the extent to which they must be exercised. Each person in so far as he is a true contributory to this complex whole of conduct is a reflexion in his own person of the social order. His own functions are settled by his peculiar circumstances, and he has to see that in his conduct he shall so utilise his nature and his opportunities as to become efficient for the social good. If he is a good man he will make such actions as advance the social good the object of his desires; or, in other words, he will desire such things as are required for the social good. He is himself a complex mental organism, and his desires are not uniform but multiform. Together they form a system or whole which is his personal ideal, the many-sided object of his desires. The moral ideal, whether it be taken as the personal ideal of each good man, or as the ideal of the whole community, is thus the object of desires.

In what sense then is an ideal raised above the ordinary range of mental facts? I put aside as irrelevant to the matter the question whether ideals are ever realisable, whether an ideal is something put forward as an end to which we strive to approximate but know that we cannot attain. It is certain that we are always projecting in front of us an improvement on those attainments which we have effected in the past. But whether we think of an ideal as something essentially unattainable, or more exactly hold that the ideal is attained in any good act, but brings forth other ideals superior to itself; in either case the ideal remains nothing more nor less than the object of desires,—an object which floats before the mind in idea before it is effected in reality. Such ideals represent sentiments—the love of country, of family, the desire to help distress, the desire to maintain unimpaired our free individuality, the desire to embody a talent in a work of art or science. To say that the moral ideal stands alone is to deprive it of its material character, to suppose it something apart from the particular duties which it imposes, something other than those exercises of human volition which by experiment or experience have settled into that adjustment or equilibrium which we style the moral order.

Only in one respect can it be urged that the ideal stands by itself—that it is no mere congeries of desires but a systematic whole, and can be held before the mind on occasion as such a single whole of objects of desire. And the same may be said of the standards of truth and beauty. They too imply many elements of knowledge or sensuous form, but these elements constitute one whole or system. How is such a system possible? Does it not by its systematic character not only differ from any desire or perception, but imply the existence of something which can alone be the author of systems? There is much force in this contention, and the questions which it raises cannot be easily disposed of without attempting a whole philosophy. Nevertheless the contention is ill-grounded. It is true that the systematic character of ideals separates them from single desires, but to allow this is to do nothing more than assert the claim of ideals to be recognised as real and distinctive mental existences. But their systematic character arises from the systematic character of society itself, and of the individuals who compose society. Other systems can be found in the world than in the region of ideals of value. These ideals are nothing but organic forms of which the constituents are human individuals. There is nothing in a system as such which is not illustrated by any animal or plant. But no animal, or plant, it will be urged, can think of its system, its organised form of life, *as such:* no animal has a consciousness which can contemplate its end *as a unity*. This is true. But the ability of a creature to present its end at once to its consciousness is something which follows from the ability to present any single object to consciousness at all. It is with a true strategic instinct that those who find in human intelligence something unique and inexplicable begin by finding the presence of this principle in the very beginnings of human intelligence, in perceptions. Their position is indeed undermined by every advance which is made in psychology, by all the proofs which accumulate to show that ideas, which as distinguished from sensations become the central position of such philosophies, are but impressions recurring in modified form; by every step which is discovered in the genesis of the idea of an object as such. It may be that the gaps have not yet been satisfactorily filled in the sequence which connects human consciousness proper with the purely sensitive consciousness. Yet even if we grant to these thinkers this temporary advantage it remains certain that the idea of a system *as a unity* is explicable by association or other complication of ideas,

when once it is possible to form an idea of an object at all. An ideal, as an object of desires, presents therefore no element which is not presupposed in the whole of human intelligence. And once again, even if we grant the existence of something peculiar in human consciousness, no reason exists for elevating ideals, whether of goodness, truth, or beauty, into a class by themselves as things which exist outside the range of facts, in the proper sense. Value is, once again, one kind of mental fact, in whatever sense mental fact is understood, and, to repeat the assertion with which this discussion began, ideals are the formulations of desires.

"Sollen" is thus one kind of "Seyn". That which "ought to be" represents the sentiments of good men, and these sentiments are as much facts as hunger or love, and more powerful. Yet it will be answered that after all this evades the real issue. "It is true that the moral ideal is but a mass of sentiments. But still the sentiments which are formulated in the ideal are sentiments as to what kind of action *ought* to take place." This must be emphatically denied. The sentiment which prompts a man to do an act of benevolence may indeed be accompanied by the feeling that such an act ought to be done, but in itself it is nothing but a sentiment which drives the person who feels it into the particular action. The whole standard of what ought to be done operates upon the minds of good men with this impelling force, and there is no new quality of duty or "oughtness" which is contained in the object of all their desires. What the objection must be taken to mean is that the "oughtness" of the moral ideal does not lie in the ideal itself, as such, but in the power or authority of the ideal over those who are to obey it, and that this "oughtness" which attaches to any moral object is something unique or, if the term be preferred, transcendental. In other words, when we say that in morality we are dealing not with what is, but with what ought to be, we do not mean that there is anything unique or transcendental in the moral law itself, but in its obligatoriness, and this obligatoriness is either itself something which has value, or it gives value to the moral law, and that which has value is no longer simple fact. But even in this form the distinction of value and fact breaks down. For what is this obligation, this authority which attaches to morality? Take the case of the ordinary moralised person, and note what happens when he feels himself bound to do a particular action, say an act of benevolence. Let us suppose that he has some dislike to performing the act, would rather keep his money for some

project nearer his own heart, but duty compels him to do the act. What happens in his mind is something of the following kind. The sight of the object requiring relief suggests to him the idea of benevolence, but before this idea becomes powerful enough to pass into action, conflicting ideas suggested by the idea of the money necessary for the act enter the field of view. But, at the same time, the idea of the benevolent act awakes by association all the ethical ideas—that is, all the moral sentiments which education has tuned into such sympathy that they vibrate whenever any one of them is touched. The whole force of these moral sentiments supports the idea of the good act, and repels the idea of the self-indulgence; and in so far as their compulsive force restrains the evil sentiment, the good idea is felt to be invested with the character of duty. Supposing there were no inclinations which impel against the moral requirement, the force behind the particular duty would be felt in the milder form of authority. What then is the obligation which we attach to any moral ordinance? We have seen that the moral ideal itself is nothing but a name for certain sentiments. The upholders of a unique "oughtness" or "obligation" which severs "value" from "fact" evade the force of this truth by seeking refuge in the original character of "obligation". But this obligation is itself nothing but a sentiment. It is the sentiment of approval in the good man's mind which follows upon his presenting to himself the idea of the good act, or the sentiment of disapproval which he feels upon presenting to himself the idea of the bad act. The pleasure which arises in the one case and the pain in the other indicate that the ungenerous course is not compatible with the whole mass of sentiments which are the effective force in determining his action. These sentiments are, to use the language of Herbart's school, the apperceiving mass which is employed in all the good man's conduct.

Something must be added or reiterated to qualify the naked assertion that that which gives the characteristic flavour to an act as moral, its obligation, or its goodness, consists in nothing but a sentiment. The sentiment is a sentiment on the part of the good man. With the bad man we are no farther concerned. For him duty has no meaning, in so far as he is bad: he is accessible only to the compulsion of rewards or punishments. The authority which he recognises is but the seduction of favours to be won, or the terrors of displeasure to be endured. His apperceiving masses are different from those which impel to right behaviour; he

sees the world with other eyes. He, too, has his ideals; they are with him too the formulation of his desires; he has too his apparent approvals and disapprovals, but that which pleases him displeases the good man. His sentiments have their place as facts in the world of human feelings. But since they are not the same as the sentiments of the good man, they are declared by the good man to have no value. A bad man means, therefore, in the first instance, nothing more nor less than a person whose sentiments and consequent approbations differ from those of the good man. The whole fabric of morality reposes upon a difference of tastes.

A certain dislike is felt to accepting the notion that the goodness of a good act is nothing but the approval of it by the good man. The doctrine is not indeed in substance a new one: it is practically equivalent to the doctrine as understood by Hume that the moral sense decides immediately upon the goodness of conduct.[1] For the moral sense is nothing but the mass of moral or, let me say (to use a neutral term), "active" sentiments operating in the way of approval or disapproval. In effect it is a mistaken apprehension of this doctrine which lies at the basis of intuitionism in morals under all its forms, whether in the naïve and unreflective form of the English intuitionists or the stimulating and suggestive form which it assumes in the already-mentioned Herbartian ethics. It is because goodness is nothing but the approval of the good man that there is plausibility in declaring that certain feelings within us are the absolute judges of what is right and wrong. The mistake of English intuitionism lay in breaking off all inquiry into the origin of these feelings by declaring them to be original and inexplicable; the mistake of the Herbartian doctrine lay in attributing to these feelings a character and an object which they do not possess. Still the identity of goodness with the feeling of approval conflicts with the feeling that there is something external or objective in right or wrong, something which can be apprehended in feeling, but is itself not feeling. Yet if we ask where is this objective morality of which our moral sentiments are but the apprehension, we receive an answer which is either intangible or implies the truth of our assertion. If we are told that morality is some ideal principle, we ask our informants the meaning of such principle dissociated from moral habits

[1] "We do not infer a character to be virtuous because it pleases; but in feeling that it pleases after such a particular manner we in effect feel that it is virtuous." (Hume's *Treatise*, bk. iii. pt. i. § 2.)

and aspirations. If we are told that objective morality consists of the settled modes of behaviour required by a society of its members, we do but receive corroboration of the suspected theory. For the institutions of society are not parliaments and churches, town-halls and law-courts, schools and universities: they are not temples built with hands: they are the habits of actions which centre round these "institutions," which find in buildings or written ordinances their point of attachment; they exist solely in the feelings or sentiments of men, or what is the same thing, in the conduct or volitions which represent the muscular discharge of those sentiments. In morals we are in a purely mental region: we are dealing with the wishes of men and women, suggested and modified by all manner of physical circumstances, but not identical with these. Goodness in ethics is a purely human invention; it implies a relation between one kind of human volition and a number of others. In like manner beauty and truth are purely human inventions: they move in the sphere of human sensation, or of knowledge, and it is a mistaken view of beauty or truth which seeks a criticism of them outside the different elements of æsthetic perception or of intellectual apprehension. But the questions raised by the nature of beauty and truth are too intricate to be discussed further here. For truth, though it means a cohesion between the parts of our knowledge, yet has reference to a world which does not vanish with our knowledge; and beauty, though it means a harmony between our sensuous impressions, is embodied in external and permanent forms. But in morals we never step outside the sphere of human sentiments. The moral order indeed abides though I disobey it: but it abides only in the sentiments of those who support it and enforce it against me. Destroy the good man, and the moral order perishes too. Where then should authority be found but in the relation between the wills or the sentiments of those in whom morality is incarnate? and this relation, being necessarily a mental relation, is experienced as a mental state, and is that approval or disapproval the more exact psychological character of which has been described. Nor is it difficult to see how, the whole having no existence outside the sentiments of good men, morality has yet an objective existence. It is objective in two ways. In the first place, as against any one particular good man, it is a totality or complex of good men, of which totality the particular goodness is a contributory factor. Its objectivity is not the external existence of the physical object, but the inclusiveness of the social

organisation. And, in the second place, as against the bad man, morality is objective as a truly external force which excludes him, so long as bad, from participation, and more than that, proves its own claim to continued existence by extirpating his bad action.

Goodness or obligation or authority (all of which may for the present purpose be regarded as identical, for they are but different shapes of one and the same thing, the relation of any one part of the moral order to the whole) are thus equivalent to the approbation which is felt by good men for the action in question ; the " oughtness " of the moral ideal is resolved into a feeling. It is so far from being a unique or transcendental phenomenon, that it is but a psychological fact like others. We can observe these approbations at different times, and note the different characters of the objects upon which they are directed. And we have but to observe their existence in the same way as we note in the realm of organic nature the actual existence as facts of different varieties of plants. But in thus handling the subject we are brought a further step in unfolding the idea of value —an advance which we may best begin by considering a further objection. For it will be said that, convincing as this reasoning may be, it yet rests upon an assumption. " In all your arguments you assume the existence of the good man. You deny the special character of the moral ideal, because it is but the formulation of desires. But these desires are the desires of the good man. You deny that obligation is anything but a sentiment, but that, sentiment is the approval felt by the good man. But if you assume the existence of the good man, have you not already assumed the very element which you are endeavouring to explain? You are able to resolve the value of morality into a sentiment because the possessor of the sentiment contains already the quality which gives the sentiment value. Whether the peculiar essence of morality be described as " oughtness " or as " goodness " matters nothing : in the good man " oughtness " is already existent. Your argument is, therefore, worthless."

This objection seems at first sight a serious one. But it really depends upon failure to apprehend the conditions which determine the existence of morality. The same objection has been urged against the proposition asserted in an earlier page, that the goodness of any particular course of conduct depended on whether such conduct would harmonise with all the other portions of conduct which are required by society, and depended upon nothing but the possibility

of such equilibration. It is asked, "is not this to declare that the goodness of any particular conduct is determined by the social order, and at the same time that the rest of the social order is determined by the goodness of this particular conduct?" Or, to state the same objection in another form, how can we tell whether any particular conduct will conduce to the social equilibrium unless we know first in what that equilibrium consists? In reality, however, there is no circularity in the argument which is impugned, but perhaps a want of power on the part of the impugners to visualise the scene. The various concordant or discordant forces which clamour for settlement adjust themselves one against the other, and the whole order or equilibrium is fixed at the very same moment as it is also fixed what particular elements can enter into this order, and what elements are excluded. There is no pre-existing whole to which the parts need to be adjusted—the whole comes into existence with the adjustment of its parts. Suppose that a number of bodies are endeavouring to form themselves into a compact whole. They are of different shapes and they can contract or expand by altering their height. But their capacity for change is not unlimited but restricted. When they have formed a compact mass each body will have a particular shape and height, but some, through inability to alter their shapes, will not be able to fall into any place at all where they can remain fitted to the other bodies, and they will be excluded. This is a coarse picture of how wishes and sentiments are adjusted to each other in the social equilibrium, and how the individual element is determined at the same time as the whole order, and at the same time as the unsuitable elements are rejected. Here is the necessary justification of seeking for an internal criterion of right and wrong as against any external criterion.

The same reasoning is valid against the objection that in treating what ought to be as merely the sentiments of a good man, and therefore as a mere human psychical fact, we are assuming covertly the elements we have resolved away. The class of good men is created at the same time as it is determined what the moral law and its ordinances are. Those who fall into the social equilibrium are the good, those who fall outside it are the bad. Good and bad, it must be insisted, are only names: names which are applied to certain persons who possess certain sentiments, and to the things which those persons approve. The words are used in the argument to designate the actual concrete men and women and their concrete actions; they imply no

covert conception of value. The argument describes a fact —that in the endeavour to satisfy the claims of one another, it is discovered experimentally that a certain arrangement of observances, or of sentiments, allows a certain number of persons to live together without disintegration from without, and without friction from within, while other persons or other courses of action can neither be got to fit into this arrangement, nor into any stable arrangement. The first set of persons are good, their approval stamps with the character of goodness the actions which they themselves practise; while they stamp with disapproval the actions which are practised by those who are not of their number, and these are the bad. Good men and the moral ideal which formulates their desires are determined together, and the objection which overlooks this process falls to the ground.

It is evident then that the sharp separation which is made between fact and value is made by thinkers who have failed to ask themselves how value itself came to exist, how such a thing as a standard comes to take its place in the world of facts. They have been impressed by the patent difference between the application of a standard to an action, and the action itself, and they have therefore supposed some new and peculiar factor, whereas the moral judgment is nothing but a sentiment which arises when an action comes into friendly or hostile contact with a mass of sentiments. But the business of ethics is to verify the growth of masses of sentiments corresponding to certain social needs. These are the standards of moral judgment; according to them value is allowed to individual actions or persons; the pronouncement of sentence follows inevitably from the existence of these standards. A particular action becomes a point of attachment for the sentiments which compose the standard; they embrace it or repel it, in the same way as an animal assimilates the food which it can utilise, and rejects that which is distasteful, or as it resists all influences which tend to impair its vitality. The growth of standards and the application of these standards is a purely natural process, and the existence of value depends upon this process.

This will become still clearer by considering briefly in what way these standards are formed. The standard itself has been represented as a system of sentiments which have been determined by equilibration, by a process of give and take between all the forces which contend for satisfaction in society. But though the equilibrium is attained experimentally it is not to be imagined that for the formation of each standard of value all the elements of society are ad-

justed to each other by innumerable trials. This would be to disregard the historical growth of ideals. In the course of time new ideals arise by the imposition of modifications upon old ideals. Each ideal as it is formed makes an equilibration of the claims of human nature at any one stage of society. As new claims are evolved, this equilibrium is disturbed, and a new one has to be discovered. This is effected by a process which passes under our eyes every time that a reform is carried. Some individual, or group of individuals, proposes a change, which means some addition to the existing energies of society and some reconstitution of its habits of action and judgment upon actions. This new ideal of social life obtains adherents among the other members of society, and at last it wins its way into acceptance. It is found to create a new equilibrium of social sentiments, and this implies that certain individuals whose sentiments cannot bend into compliance with the new order will be excluded from the circle of good men. The new order is established at the cost of a new demarcation of good from bad. This is the result of a veritable trial of strength between the new order and the old. The new order, which on the course of its way to acceptance has become variously modified through contact with many minds and their effective desires, has by virtue of its own inherent suitability to the needs of its society driven out of the field all rival claimants. Its victory is the separation of actions which accord with itself, under the name of good actions, from actions which do not accord with itself, under the name of bad actions. The power of forecasting the needs of his society is the genius of the successful reformer. This success may not be enjoyed by himself, but when it at last arrives it has introduced a new form of social organisation which has expelled the older form. Something of what was once good has now become excluded, and therefore bad.

The experiment by which social equilibrium is attained is therefore a process in which many guesses are made at the future ideal, and some one of these enlists on its side all the force of public sentiment as the result of a struggle with all the rest and with existing standards. By perpetual repetition of this process, as human nature enlarges and refines, the moral ideal moves on from age to age. At each step a new standard of value is created by the struggle between conflicting ideals of social good. It is evident that this process by which morality changes its standards resembles the process by which in lower forms of life than

ours new organisms are developed, new forms of healthy and possible life. Moral ideals are but forms of healthy social life. But this is not the place either to draw out the identity at length, or to exhibit those characteristics which give human history the appearance of utter unlikeness to the growth of lower forms. That this dissimilarity is only apparent it would not be difficult to show were this the proper occasion. One thing only needs special remark: that the gradual disappearance of brute struggle between individual men, and its supersession by united action, is not only not in conflict with the theory of the growth of morality by perpetual conflict between good and bad, but is in completest accordance with that theory. For it means that an order of things which is based on individual competition is replaced by a new order of things which is based on co-operation. Love, benevolence, toleration, humanity, a common science, a common culture—all these are new forces which arise in the growth of human nature, which can only take effect through a society more closely bound together, more careful of the single life. It is this more highly organised form of society which conflicts with one which allows freer play to the brute struggles of individuals. The very result of the struggle between different ideals of social life is to diminish the struggle between individual lives.

But these verifications of the central fact are unnecessary for our purpose. The central fact remains that moral standards represent a victory gained by persons with one ideal of social life, one set of desires, over persons with different sentiments. This is an induction from the facts of moral life, no twisting of moral data into conformity with ideas derived from other sources. But from this exposition of the natural growth of standards of value we see more closely than before, that fact and value do not stand opposed to each other, that the valuable, or what ought to be, as opposed to what is valueless, or what ought not to be, is the mere expression of the fact that a solution has been attained of the problem how to reconcile certain sentiments into one organised whole; is an effect due to the creation of a new body of sentiments, which has authority over any of its members and has power to crush by its condemnation all sentiments which resist.

We are thus brought appreciably nearer the object of our inquiry. For we see, in the first place, that value is something capable of explanation, that it is a particular phenomenon which arises in the ordinary course of development.

The mystery which hedges round the names of duty and right and ideal disappears when we have ceased to confound practical inviolability with scientific uniqueness. These sacred names are names which attach to sentiments which have acquired for themselves a position of superiority in the conflict with other sentiments. And, in the second place, we are able to give a more precise account of what constitutes value now that we have seen how it arises. For the standard of value is the social equilibrium, or, if we prefer to use biological language, the conditions which make up social vitality or social health. The value of any particular action or of any individual is the efficiency of the action or the individual for the social equilibrium, and depends upon whether the action is of such a kind as to be adapted to this equilibrium or, in looser language, to promote it. Morality is at any one time an organic whole, all the parts of which have value as contributory elements. The different things which have value for morality, have value in the same way as the parts of a steam engine or of an animal. The object of the steam engine is to perform a certain work of traction, the different parts are designed to work smoothly on each other with a view to this end. Instead of material or merely vital elements, suppose the elements to be conscious, as they are in the moral organism, and the efficiency of each part for the work of the whole takes the particular shape which we know under the name of value. Value is the efficiency of an organ which is conscious of its own functions, and on occasion can be conscious of the functions of the whole organism which it subserves. It will be understood that in speaking of an action as a conscious part of the moral organism I am using a shorthand expression for the agent as performing the action.

The affinity of value in moral judgments to value in economics, an affinity which must not, however, be pressed very far, becomes apparent. Exchange value is the amount of commodities for which a given commodity will exchange. A given kind of goods, A, is exchanged in a certain proportion for certain quantities of other kinds of goods, C, D, and the like. A is worth having and worth exchanging at a certain price. The moral ideal implies a similar exchange. There are many individuals who compose a certain society. Each contributes to the common stock a certain class of actions determined by his peculiar character and position, on condition that his fellow-citizens contribute other actions from their side. Good conduct is an exchange of services. And just as economical exchange is in principle an attempt

to secure to each person the maximum gain, under the limitations which social life imposes, so also does the moral ideal represent the maximum advantage both of the good individual and of the society as a whole to which he belongs.

The argument has attempted to define the value of individual actions or persons. Nothing has been said of the value of the ideal or standard itself. In fact, though we sometimes speak loosely of moral ideals as possessing value, as being precious or priceless, the ideal itself does not possess value; it constitutes or is value. It is the measure by which value is determined, but it is itself, as a whole, not subject to measurement by an external standard. A value, a certain standard of estimation, is determined by each step in the history of morality through which good is distinguished from bad. As the successful organisms in the battle of life are the fit, the successful ideals in human history are the valuable. But by this we mean that only that has value which is comprehended under the moral law; we cannot go beyond the record and ask whether there is any value in morality, or of what use is it to be moral. We cannot do so because it is morality itself which gives us our idea of what is useful. In declaring certain actions to be good, or certain types of character, we exhaust all our knowledge of what usefulness or worth in human life implies. To ask of what use is it to be moral is the same thing as to ask of what use is the process which creates the distinction of usefulness and worthlessness—it is to confuse the process with its products. This remark is not so obvious but that it has escaped the notice of those who with the pessimists cry out, what is the use of living? If you can show me where living competes with non-living, and on which side the question is decided, I will allow that life itself can be tried by the standard of use or value. Till you do so I can attach no meaning to the question. The question to which I can attach a meaning is the question, what form of life has use or worth? This question is answered by the history of morality. Under given circumstances, the life which has worth is the good life—the bad life is worthless. But this will seem a cold and comfortless answer to those faithful ones who choose to labour loyally in spite of suffering; and there is indeed more behind, which is already contained in the answer just given. For the sufferings endured under any social system may be removable, and may clamour to be removed. Where such a sentiment exists demanding the mitigation of certain pains, a new moral standard is in the making. And it is to this new standard that the complaints

of life appeal. This appeal corroborates the truth of the theory which is here explained. Morality is no settled thing fixed once and for ever, but is for ever changing as new sentiments arise, between which and those already in existence an equilibrium has to be found. Where certain institutions are felt as intolerable, the new standard says that this form of life is so far without value: that which has value is a new form which shall do justice to the later growths of human nature. But this form of life is still a form of *life*. It neither believes nor disbelieves that life itself has value—but it creates a new standard of value.

Pessimism is based on the belief that the worth of life or of any part of life is measured by the pleasure it produces; and the mention of pessimism is a natural transition to this general doctrine, which is, at anyrate in this country, perhaps the most widely entertained of all ethical doctrines. Pleasure is always with us in ethics, and many persons will regard with dismay the prospect of a discussion of pleasure at the end of a paper which has already reached a considerable length. But some discussion is unavoidable, and I will endeavour to be as short as is possible consistently with not being dogmatic. I have maintained that the value of a good act or a good man is measured by its efficiency towards maintaining the social equilibrium. But this theory would pretend to go further and to explain the value of an act by its capacity of producing excess of pleasure over pain, and therefore adding to the sum of pleasures which is held to be the end of moral activities. Pleasure has been so long and so unhesitatingly maintained to be both the aim of moral action and the criterion of moral value that it is no wonder if criticism has inclined to the other extreme, and denied to pleasure any place whatever in these functions. With the particular shape which this criticism has taken in the writings of T. H. Green and his followers it is impossible to agree, if only because in their anxiety to point out errors in the theories of hedonistic writers they have altogether perverted the true proportions of the thing pleasure as we know it in real life. Yet, if I do not mistake the drift of these criticisms, they have value so far as they tend to make us see that the true position of pleasure in determining moral standards must be sought not so much in the sum of pleasures as in their distribution. But this needs further explanation.

Let us begin by making the largest admissions on behalf of pleasure. It is true that any valuable act produces in the end an excess of pleasure over pain, and it is true that the

moral order produces the greatest possible sum of pleasures, in the only sense which can be attached to that phrase. It is true that the most successful form of social life is that which produces most pleasure. And it is rightly urged that this is secured by the machinery of nature, which provides that lives which produce more pain than pleasure are exterminated. It is true also that our desires are directed towards securing pleasure in so far as that we do not desire any object without presenting it to ourselves as desirable. All these truths seem to support the belief that value and pleasure are identical. But it is one thing to lay down these propositions which do but represent definite facts, and another thing to conclude from them that therefore pleasure is the primary element to which value has reference. It is possible to measure value by pleasure, while at the same time value may be founded not upon pleasure but upon something else of which pleasure is also a necessary attendant. That this latter alternative is the true one may be seen most simply from the following consideration. Given the character of a man or of the society of which he forms a part, the activities which are most suitable to this character necessarily produce the greatest amount of pleasure. But the choice of the activities depends upon the character of the man and not upon the pleasure which results from gratifying them. Different men take pleasure in different things; the good man in different things from the bad man. But the good man acts as he does because he must, because his sentiments are directed to goodness, and he does not do so directly because of the pleasure which either accrues to him from the act or is suggested to him by the idea of the act. To hold that he does so is to confuse an effect with a cause. Pleasure follows from his act, but his act is of a kind determined by his character; pleasure is suggested to him by the idea of the action, but this pleasure attaches to an action of a certain kind which is suggested to him by his character. In every case the character of the man, and consequently the quality of his actions, is the primary element; pleasure arises from the fact that such an action accords with his character, and it is always experienced in connexion with the action and has no separate existence apart from the action or apart from the character to which the action makes appeal.

The only difficulty which can be raised against this statement arises from the fact that we do learn by experience of pleasures and pains to modify our conduct, repeating what produces an excess of pleasure over pain, and avoiding what

produces an excess of pain over pleasure. But the difficulty vanishes on considering that pleasure and pain are nothing but synonyms for the successful or unsuccessful, suitable or unsuitable, exercise of our powers, or at least arise from these sources. The reason why we avoid what is painful is not the pain, which is merely the fact that the action is painful, but our temperament or character, which seeks expression in modes which are suitable and therefore cause pleasure. When we suffer pain on the whole, that is, when our pleasure is outweighed by our pain, either something has happened which is in disaccord with our character, or our character is itself in the process of change. We have an instance of the first whenever any bad act is committed. The pain which the action causes indicates that the action has on the whole impeded the energies of the society, has disturbed the equilibrium of society, and this is the reason why it causes pain. We have an instance of the second kind when some recognised institution of society begins to pinch and cause suffering. We avoid the suffering by creating a fresh institution, and therefore by altering so far the elements which go to make up the standard of good character in the society. But the reason why the change takes place is the development of these new elements in persons; the pain which is caused by the old institutions is the revelation of this new development. Thus the pain which leads to change of ideals, and the pleasure which leads to persistence in the old, testify in the one case to the growth of character, in the other case to its persistence. The point is worth further consideration, for the belief that pleasure and pain are the foundation of our moral ideals and therefore of our standards of value is exactly analogous to the belief that natural selection in the animal world is the *cause* of the growth of new forms of life. As has often been pointed out, the struggle for survival represents not the cause of growth but its method. The causes which produce the origin of new forms are, if we put aside the birth of variations, the constitution of the contending organisms. These struggle with each other, the result of the struggle being determined by the combined action of the combatants' qualities under the conditions which are supplied by the environment. The incidents of this struggle are the gratifications which follow any victory, and the pains which follow any defeat. These are the indications that the successful organism is fit to live. But its fitness consists in the qualities which give it this superiority over other forms. Now we have seen how the growth of standards of value repeats

this process. The pains which lead to a new standard mean that the old standard is being vanquished in the struggle, but the valuelessness of the old in comparison with the new depends, as in the case of animal development, on the absence from the old of those qualities which give the new standard its utility. Moral ideals conquer, and value, therefore, arises in virtue of the qualities of the ideal, that is, of the men who give the ideal its living expression.

Now since it is the constitution of the organism, no matter whether that organism be the mental organism of the individual man or the organism of the whole society, which determines its actions, it is plain that the value of conduct must depend on the balance between the exercise of the different parts of its constitution. Undoubtedly the most healthy exercise produces the greatest possible pleasure, but that result can only be obtained by the exercise in proper order and in proper frequency of the various organic factors. The reason why a factory whose hands are well-paid, well-fed, and kept in healthy rooms is of greater value than a factory where hands are overworked, and ill-fed and put to work in stifling rooms, is not that the output of the first is greater, but on the contrary the output is greater because of the excellence of the arrangement. In like manner the greatest possible pleasure is a measure of value only because the sum is made up of the pleasures belonging to the different elements of human nature exercised in proper proportion and frequency. Given this distribution of the elements, we have a corresponding distribution of pleasures, and the sum total of pleasure is a maximum. But this maximum can serve as a test of value only because of the real cause of value, the law of distribution.

To investigate more fully the position of pleasure would require another paper. I have put the matter in the simplest way which occurred to me as possible without entering into vexed questions. One such question is the question whether pleasure can be truly said to be of the same kind everywhere, and not rather different in kind according to the different exercise of the human character which it accompanies. I leave such questions untouched, and found the case entirely on the secondary position of pleasure. Pleasure is a vital element of the whole moral life, but it exists only in combination with other elements. It is a function of character: character is not a function of pleasure. Character is the determining cause of our ideals, and on it, the determining cause, the idea of value is founded.

Not therefore the sum of pleasures is the essential feature

of morality if we regard morality from the point of view of pleasure, but the particular way in which this sum is arrived at by obtaining pleasures from exercising the various elements of character—in a word, what I described above as the distribution of pleasures. The distribution of pleasures corresponds with the distribution of energies in the moral organism. Now it is this very idea of distribution of energies which is covered by the idea of efficiency. In declaring value to be the efficiency of an act towards furthering or producing the social equilibrium, we are in effect declaring that value depends on the distribution of work, the division of labour required for this equilibrium. A man is valuable according as he is efficient to promote the work of society, and on the other hand society. being itself the standard of value, has the title to be such because it promotes the efficiency of each individual—these two results, the equilibrium of the whole society and the efficiency of each person in it, being effected at the same moment.

To conclude, I have endeavoured to state and demonstrate two main principles. The first is that value is nothing but the efficiency of a conscious agent to promote the efficiency of society, to maintain the equilibrium of forces which that society represents. This appeared at first directly from inquiring into what the moral standard was and how it arose. And it was maintained indirectly in opposition to the view that value was determined by pleasure. Recognising that pleasure was truly a measure of value, we saw that it was such only because it itself depended on a true distribution of portions of pleasure, which distribution was itself the cause of the prosperity of the moral standard. The other result at which we arrived was that value is itself not something separable from other mental facts by a wide gulf, but was itself a fact of a purely natural order. The standard of value or ideal we saw to be but the formulation of desires, and the value of each separate part of the standard to be in return nothing but a sentiment of approval of certain actions or certain characters. In this way the idea of value becomes something which we can describe and discuss and put into relation with all other facts of organic life, and the exposition has served to verify that view of the method of ethics (and with it of æsthetics and the science of truth) which removes these sciences from the domain of metaphysics, and classes them as the last or psychical class of the natural sciences.

IV.—THE CHANGES OF METHOD IN HEGEL'S DIALECTIC. (I.)

By J. Ellis McTaggart.

My object in this essay will be to show that the method by which Hegel proceeds from one category to another in his logic is not the same throughout, but is materially different in the later categories from the form to be found in the earlier stages. I shall endeavour to show that these changes can be reduced to a general law, and that from this law we may derive important consequences with regard to the general nature and validity of the dialectic.

The exact relations of these corollaries to Hegel's own views is rather uncertain. Some of them do not appear to be denied in any part of the logic, and, since they are apparently involved in some of his theories, may be supposed to have been recognised and accepted by him. On the other hand, he did not explicitly state and develop them anywhere, which, in the case of doctrines of such importance, is some reason for supposing that he did not hold them. Others, again, are certainly incompatible with his express statements. I desire, therefore, in considering them to leave on one side the question of how far they were believed by Hegel, and merely to give reasons for thinking that they are necessary consequences of his system, and must be accepted by those who hold it.

The passage in which Hegel sums up his position on this point most plainly is to be found in the *Smaller Logic*, Section 240, and runs as follows: "The abstract form of the continuation or advance is, in Being, another (or antithesis) and transition into another; in the Essence, showing or reflexion in its opposite; in the Notion, the distinction of the individual from the universality, which continues itself as such into, and forms an identity with, what is distinguished from it".

The difference between the procedure of Being and that of Essence is given in more detail in Section 3, lecture note. "In the Sphere of Essence one category does not pass into another, but refers to another merely. In Being the form of reference or connexion is purely a matter of our own reflexion: but it is the special and proper characteristic of

Essence. In the Sphere of Being, when somewhat becomes another, the somewhat has vanished. Not so in Essence: here there is no real other, but only diversity, the reference of one category to its antithesis. The transition of Essence is therefore at the same time no transition; for in the passage of different into different, the different does not vanish: the different terms remain in their connexion. When we speak of Being and Nought, Being is independent, so is Nought. The case is otherwise with the Positive and the Negative. No doubt these possess the characteristics of Being and Nought. But the positive by itself has no sense; its whole being is in reference to the negative. It is the same with the negative. In the Sphere of Being the reference of one term to the other is only implicit; in Essence, on the contrary, it is explicitly stated. And this in general is the distinction between the forms of Being and Essence: in Being everything is immediate, in Essence everything is relative."

And again, in describing the transition from Essence to the Notion, he says (*Enc.* Section 161, lecture note): "Transition into something else is the dialectical process within the range of Being; reflexion (bringing something else into light) in the range of Essence. The movement of the Notion is development; by which that only is explicitly affirmed which is already naturally and properly speaking present. In the world of nature, it is organic life that corresponds to the grade of the notion. Thus, *e.g.*, the plant is developed from its seed. The seed virtually involves the whole plant, but does so only ideally or in thought; and it would therefore be a mistake to regard the development of the root, stem, leaves, and other different parts of the plant as meaning that they were realiter present, but in a minute form, in the germ. That is the so-called 'box-within-box' hypothesis; a theory which commits the mistake of supposing an actual existence of what is at first found only in the shape of an ideal. The truth of the hypothesis on the other hand lies in its perceiving that, in the process of development, the Notion keeps to itself, and only gives rise to alteration of form without making any addition in point of content. It is this nature of the Notion—this manifestation of itself in its process as a development of its own self—which is the point noted by those who speak of innate ideas in men, or who, like Plato, describe knowledge merely as reminiscence. Of course that again does not mean that everything which is embodied in a mind, after that mind has been formed by instruction, had been present to it beforehand in a definitely expanded shape.

"The movement of the Notion is after all a sort of illusion. The antithesis which it lays down is no real antithesis. Or, as it is expressed in the teaching of Christianity, not merely has God created a world which forms a kind of antithesis to Him; He has also from all Eternity begotten a Son, in whom He, a spirit, is at home with Himself."

2. The result of this process may be summed up as follows: The further the dialectic goes from its starting-point the less prominent becomes the apparent stability of the individual finite categories, and the less do they seem to be self-centred and independent. On the other hand, the process itself becomes more evident and obvious, and is seen to be the only real meaning of the lower categories. In Being each category appears, taken by itself, to be permanent and exclusive of all others, and to have no principle of transition in it. It is only outside reflexion which examines and breaks down this pretence of stability, and shows us that the dialectic process is inevitable. In Essence, however, each category by its own import refers to that which follows it, and the transition is seen to be inherent in its nature. But it is still felt to be, as it were, only an external effect of that nature. The categories have still an inner nature, as compared with the outer relations which they have with other categories. So far as they have this inner nature, they are still conceived as independent and self-centred. But with the passage into the Notion things alter; that passage "is the very hardest, because it proposes that independent actuality shall be thought as having all its substantiality in the passage, and in the identity with the independent actuality confronting it". (*Enc.* Section 159.) Not only is the transition now necessary to the categories, but the transition *is* the categories. The reality in any finite category consists only in its summing up those which went before, and in leading on to those which come after.

Correlative with this change, and connected with it, is another. In the categories of Being the typical form is a transition from a thesis to an antithesis which is merely complementary to it, and is in no way superior to it in value or comprehensiveness. Only when these two extremes are taken together is there for the first time any advance to a higher Notion. This advance is a transition to a synthesis which comes as a consequence of the thesis and antithesis jointly. It would be impossible to obtain the synthesis, or to make any advance, from either of the two complementary terms without the other. Neither is in any respect more advanced than the other, and neither of them can be said to

be more closely connected with the term in which both of them alike find their explanation and reconciliation. But when we come to Essence the matter is changed. Here the transition from thesis to antithesis is still indeed from positive to negative, but it is more than merely this. The antithesis is not merely complementary to the thesis, but is a correction of it. It is consequently more concrete and true than the thesis and represents a real advance. And the transition to the synthesis is not made so much from the comparison of the two previous terms, as from the antithesis alone. For the antithesis has not merely the contrary defect to the thesis, but it has to some extent corrected the mistake, and therefore has—to use the Hegelian phraseology—" the truth " of the thesis more or less within itself. As the action of the synthesis is to reconcile the thesis and the antithesis, it can only be deduced from the comparison of the two. But if the antithesis has—as it has in Essence—the thesis as part of its own significance, it will present the whole of the data which the synthesis requires, and it will not be necessary to recur to the thesis, before the step to the synthesis is taken.

But although the reconciliation can be inferred from one term of the pair without the other, a reconciliation is still necessary. For, although the antithesis is an advance upon the thesis, it is also opposed to it. It is not simply a completion of it, but also a denial, though a denial which is already an approximation to a union. This element of opposition and negation tends to disappear in the categories of the Notion. Here the steps are indeed discriminated from one another, but they can scarcely be said to be in opposition. For we have now arrived at a consciousness more or less explicit that in each category all that have gone before are summed up, and all that are to come after are contained implicitly. " The movement of the Notion is after all a kind of illusion. The antithesis which it lays down is no real antithesis." And, as a consequence, the synthesis merely completes the antithesis, without correcting one-sidedness in it, in the same way as the antithesis merely expands and completes the thesis. As this type is realised, in fact, the distinctions of the three terms gradually lose their meaning. There is no longer an opposition produced between two terms and mediated by a third. Each term is a direct advance on the one before it. The object of the process is not now to make the one-sided complete, but the implicit explicit. For we have reached a stage when each side carries in it already more or less con-

sciousness of that unity of the whole which is the synthesis, and requires development rather than refutation.

That these changes should accompany the one previously mentioned is natural. For, as it is gradually seen that each category, of its own nature, and not by mere outside reflexion on it, leads on to the next, that next will have inherent in it its relation to the first. It will not only be the negation of the first, but it will know itself to be such. It will not only be the complement of the thesis, but it will be aware that it is a complement, and will know what it is that it completes. In so far as it does this, it will be higher than the thesis. For, although each category will see that it is essential to it that it should be connected with the other, this can do nothing in the thesis but give a general character of transitoriness to it, for it only knows that it is connected with something, but does not yet know with what. But the antithesis knows with what it is connected, for we have already passed through the thesis before we can reach it, and it is through the thesis that we have come to it. And to know that it is inseparably connected with its opposite, and defined by its relation to it, is an important step towards the reconciliation of the opposition. *A fortiori* the greater clearness and ease of the transition will have this effect in the case of the Notion. For there we see that the whole meaning of the category lies in its passage to another. The second, therefore, has the whole meaning of the first in it, as well as the addition that has been made, and must therefore be higher than the first.

From this follows the different relation to the synthesis. For the result of the more or less complete inclusion of the thesis in the meaning of the antithesis is, as we have seen, the possibility of finding all the data required for the synthesis in the antithesis alone, while the completely successful absorption of each term in its successor tends to obliterate the triple distinction altogether, in which case each term would be a simple advance on the one below it, and would be deduced from that one only.

While Hegel expressly notices, as we have seen, the increasing freedom and directness of the dialectic movement, he makes no mention of the different relation to one another assumed by the various members of the process, which I have just indicated. Traces of the change may, however, be observed in the detail of the dialectic. The three most significant triads to examine for this purpose will be the first in the division of Being, the middle one in the division of Essence, and the last one in the division of the Notion.

For, if there is any change within each of these three great divisions (a point we must presently consider) the special characteristics of each division will be shown most clearly at that point in which it is at the greatest distance from each of the other divisions. The triads in question are those of Being, Not-Being, and Becoming; of the World of Appearance, Content and Form, and Ratio; and of Life, Cognition, and the Absolute Idea.

Now, in the first of these, thesis and antithesis are on an absolute level. Not-Being is no higher than Being: it does not contain Being in any sense in which Being does not contain it, it is as easy to pass from Not-Being to Being as *vice versâ*. And Not-Being by itself is helpless to produce Becoming—as helpless as Being is. The synthesis can only come from the conjunction of both of them. On the other hand, the idea of Content and Form, according to Hegel, is a distinct advance on the idea of the World of Appearance, since in it "the connexion of the phenomenon with self is completely stated". Ratio, again, although the synthesis of the two previous terms, is deduced from the second of them alone, while it could not be deduced from the first. It is the relation of form and content to one another which leads us on to the other relation which is called Ratio. (*Enc.* Section 134.) And, again, the idea of Cognition is a distinct advance upon the idea of Life, since the defect in the latter from which Hegel explains the existence of death is overcome as we pass to cognition. And it is from Cognition alone, without any reference back to Life, that we reach to the Absolute Idea, which is derived from the consideration of the perfect form of Cognition proper and of the perfect form of Volition—which latter also forms part of the antithesis, under the general name of Cognition.

3. Another point arises, on which we shall find but little guidance in Hegel's own writings. To each of the three great divisions of the dialectic he has ascribed a peculiar variation of the method. Are we to understand that one variety changes into another suddenly at the transition from division to division, or is the change continuous, so that, while the typical forms of each division are strongly characterised, the difference between the last step in one and the first step in the next is no greater than the difference between two consecutive steps in the same division? Shall we find the best analogy in the distinction between water and steam,—a qualitative difference suddenly brought about when a quantitative change has reached a certain point, or in the distinction between youth and manhood, which at

their most characteristic points are clearly distinct, but which pass into one another imperceptibly?

On this point Hegel says nothing. Possibly it had never presented itself to his mind. But it seems to me that traces may be observed throughout his logic which may lead us to believe that the change of method is gradual and continuous.

In the first place, we may notice that the absolutely pure type of the process in Being occurs in the first triad only. Being and Not-Being are on a level. But if we compare Being *an sich* with Being for another, the One with the Many, mere Quantity with Quantum, the Infinite Quantitative Progression with the Quantitative Relation, and the Rule with the Measureless, we observe that the second category is higher than the first in each pair, and that it is not merely the complement of the first, but to a certain degree transcends it. And the inherent relation of thesis to antithesis seems to develop more as we pass on, so that before Essence is reached its characteristics are already to some measure visible, and the mere passivity and finitude of Being itself is broken down.

If, again, we compare the first and last stages of Essence, we shall find that the first approximates to the type of Being, while the last comes fairly close to that of the Notion, by substituting the idea of development for that of the reconciliation of contradictions. Difference, as treated by Hegel, is certainly an advance on Identity, and not a mere opposite, but there is still a good deal of opposition between the terms. The advance is shown by the fact that Difference contains Likeness and Unlikeness within itself (*Enc.* Section 117), while the opposition of the two categories is clear, not only in common usage, but from the fact that the synthesis has to reconcile them, and balance their various deficiencies. But when we reach Substance and Causality we find that the notion of contradiction has almost vanished, and that the notion of development has taken its place nearly as completely as could happen if we were already in the sphere of the Notion.

So, finally, the special features of the dialectic in the Notion are not fully exhibited till we come to its last stage. In the transition from the Notion as Notion to the Judgment, and from the Judgment to the Syllogism, we have not entirely rid ourselves of the elements of opposition and negation. It is not till we reach the concluding triad of the Logic that we are able fully to see the typical progress of the Notion. In the transition from Life to Cognition, and from Cognition to the Absolute Idea, we perceive that the

movement is all but completely direct, that the whole is seen as in each part, and that there is no longer a contest, but only a development.

4. Much weight, however, cannot be placed on all this, partly because of the extreme difficulty of comparing, quantitatively and exactly, shades of difference so slight and subtle, and partly because Hegel nowhere explicitly mentions any continuous process, and there is therefore some ground for supposing that the continuity, if it existed, had escaped his notice. But the fact that some traces of such a continuous development are found in his logic may be some additional support, if we are able to conclude that such a development would, in a correct dialectic, be continuous.

Before we consider this question we must first inquire whether the existence of such a development of method of any sort, whether continuous or not, might be expected from the nature of the case. We shall see that there are reasons for supposing this to be so, when we remember what we must regard as the essence of the dialectic. The motive power of the whole process is the concrete absolute truth, from which all finite categories are mere abstractions, and to which they spontaneously tend to return. Again, two contradictory ideas cannot be held true at the same time. If it ever seems inevitable that they should be, this is a sign of error somewhere, and we cannot feel satisfied with the result, until we have transcended and synthesised the contradiction. It follows that in so far as the finite categories announce themselves as permanent, and as opposed in pairs of unsynthesised contradictories, they are expressing falsehood and not truth. We gain the truth by transcending the contradictions of the categories and by demonstrating their instability. Now the change in the method, of which we are speaking, indicates a clearer perception of the truth. For we have seen that it becomes more spontaneous, and more direct. As it becomes more spontaneous, as each category is seen to lead on of its own nature to the next, and to have its meaning only in the transition, it brings out more fully what lies at the root of the whole dialectic—that truth, namely, lies only in the synthesis. And as the process becomes more direct and leaves the opposition and negation behind, it also brings out more clearly what is an essential fact in every stage of the dialectic,—that is, that the impulse of our imperfect truth is not towards self-denial as such, but towards self-completion. The essential nature of the whole dialectic is thus more clearly seen in the later stages, which approximate to the type of the Notion,

than in the earlier stages, which approximate to the type of Being.

This is what we might expect *a priori*. For the content of each stage in the dialectic is nearer to the truth than that of the stage before it. And each stage forms the starting-point and the premise from which we go forward again to further truth. And, therefore, as at each step in the forward process we have a fuller knowledge of the truth than at the last, it is only natural that that fuller knowledge should react upon the manner in which the step is made. The dialectic is due to the relation between the concrete whole, implicit in consciousness, and the abstract part, explicit in consciousness. Since the second element alters at each step, as the categories approximate to the complete truth, it is clear that the relation between it and the unchanging whole alters also, and this must affect the process. Just as the velocity of a falling body increases, because (among other reasons) each moment brings it nearer the attracting body, and increases the power of the attraction, so every step which we take towards the full truth renders it possible to proceed more easily and more directly to the next step.

Even without considering the special circumstance that each step in the process will give us this deeper insight into the meaning of the work we are carrying on, we might find other reasons for supposing that the nature of the dialectic process is modified by use. For the conception of an agent which is purely active, acting on a material which is purely passive, is a mere abstraction, and finds a place nowhere in reality. Even in dealing with physical examples we find this. An axe has not the same effect at its second blow as at its first, for it is more or less blunted. A violin has not the same tone the second time it is played on as the first. And a conception which is inadequate even to the relations of matter must be still more unfit for application to mind when engaged on its most characteristic task. Here least of all could a rigid distinction be kept up between form and matter, between instrument and materials.

And these arguments for the existence of change in the method are also arguments for supposing that the change will be continuous. There is reason to expect a change in the method whenever we have advanced a step towards truth. But we advance towards truth, not only when we pass from one chief division of the logic to another, but whenever we pass from category to category, however minute a subdivision of the process they may represent. It would therefore seem that a change in method is to be

expected after each category, and that no two transitions throughout the dialectic present quite the same type. However continuous the change of conclusions can be made, the change of result must be equally continuous.

Besides this, we may observe that the change of method is connected with the change from one to the other of the three great divisions of the dialectic, which respectively form the thesis, antithesis, and synthesis of an all-comprehensive triad. It is thus the change from thesis to antithesis, from antithesis to synthesis, or from synthesis to a fresh thesis, which is accompanied by a change of method. But the dialectic within each of the three stages, Being, Essence, and the Notion, is not looked upon as a continuous flow of thought, but is broken up again into subordinate triads, and these are again broken up into others which are still lower. Wherever the observation of thought and its consequent division are carried closer than before, we find that it takes place only by the discovery within each member of a triad of a fresh subordinate triad, and this only ceases when we have reached the furthest point of minuteness to which we are able or willing to carry our scrutiny. Consequently the change in method which is caused by a transition from member to member of the dialectic must occur, not twice only in the whole system, but wherever any step in thought is made, however minute that step may be. Whether it is or is not correct to ascribe the change in method to the increasing truth and adequacy of each category, it cannot be doubted that in some way or other they are concomitant, and as the one has many gradations in each of the three largest divisions, we have an additional reason for supposing that such gradations may also be found in the other.

5. We may, therefore, I think, fairly arrive at the conclusion, in the first place, that the dialectic process does and must undergo a progressive change, and, in the second place, that that change is as much continuous as the process of the dialectic itself. Another question now arises: Has this change in the method destroyed its validity? The ordinary proofs relate only to characteristic of Being, which, as we have now found reason to believe, is only found in its purity in the very first triad of all. Does the gradual change to the types characteristic of Essence and the Notion make any difference in the justification of the method as a whole?

It would seem that it does not do so, because the force of the process is the same throughout. It consisted, in the first division of the Logic, of a search for completeness, and of a search for harmony between the elements of that com-

pleteness, and these two stages are separate. Later on we have the same search for completeness and harmony, but they are combined in a single operation. In Being, the inadequacy of the thesis led on to the antithesis. Each of these ideas was regarded as an immediate and self-centred whole. On the other hand each of them implied the other, since they were complementary and opposite sides of the truth. This brought about a contradiction, which had to be reconciled by the introduction of the synthesis. Now the change in the process has the effect of discarding the intermediate stage in which the two sides of the whole are viewed as incompatible and yet inseparably connected. For in the stage of Essence each category has a reference in its own nature to those which come before and after it. So far as the thesis refers to the antithesis which has not yet been reached, this is a reference to the as yet unknown, and does not much extend the positive content of the idea. But with the antithesis, in its reference to the thesis, which is already known, the thing is different. We have here a sort of anticipation of the synthesis, in the recognition that the two sides are connected by their own nature, and not merely by external reasoning. The result of this is that the harmony is, to a certain extent, given by the same step which gives us the completeness, and ceases to require a separate process. For when we have seen that the categories are essentially connected, we have gone a good way towards the perception that they are not incompatible. The harmony thus attained in the antithesis is, however, merely partial, and leaves a good deal for the synthesis to do. In the Notion, the change is carried farther. Here we have the perception that the whole meaning of the category resides in the transition, and the whole thesis is really summed up in the antithesis, for the meaning of the thesis is thus only the production of the antithesis, and it is therefore summed up and transcended in the latter. In fact the relation of thesis, antithesis and synthesis would actually disappear in the typical form of the process as exhibited in the Notion, for each term would be the completion of that which was immediately before it, since all the reality of the latter would be seen to be in its transition to its successor. That this never actually happens, even in the final triad of the whole system, is due to the fact that the characteristic type of the Notion, as the last stage of the dialectic, represents the process as it would be when it started from a perfectly adequate premise. When however the premise, the explicit idea in the mind, became perfectly adequate and true, we should have rendered ex-

plicit the whole concrete idea, and the object of the dialectic process would be attained, so that it could go no further. The typical process of the Notion is therefore an ideal, to which the process approximates more and more closely throughout its course, but which it can only reach at the moment when it stops completed.

Thus it will be seen that the change may be expressed as the gradual disappearance of the explicit synthesis from without of two complementary truths which apart from that synthesis would be contradictory. This disappearance is due to the fact that the terms are gradually seen with greater and greater clearness, only to exist, first if related to one another, and then as related to one another, and consequently to carry their synthesis and harmony in themselves. No element in the original process is left out, and no fresh one introduced, but the two operations which had at first to be performed independently, and almost, as it were, in opposition to one another, the second destroying the contradictions which it seemed the chief result of the first to produce, are now seen to be inherently connected. If, therefore, any proof which may be given of the validity of the dialectic method in its earlier stages be correct, we are entitled to say that for the same reasons it is valid through all its changing forms.

6. From this change in the method some very important inferences may be drawn. The first of these is one which we may fairly attribute to Hegel himself, because, although he does not explicitly mention it anywhere, yet it is clear from the deduction of the categories as given by him. This is the subordinate place held by negation in the whole process. Independently of this change we could observe that the importance of negation in the dialectic is by no means primary. In the first place, Hegel's logic is very far from resting, as is supposed by some people, on the violation of the law of contradiction. It rather rests on the impossibility of violating that law, on the necessity of finding, for every contradiction, a reconciliation in which it vanishes. And not only is the idea of negation destined always to vanish in the synthesis, but even its temporary introduction is an accident, though an inevitable accident. The motive force of the process lies in the discrepancy between the concrete and perfect idea implicitly in our own minds, and the abstract and imperfect idea explicitly in our minds, and the essential characteristic of the process is in the search of this abstract and imperfect, not after its negation as such, but after its complement as such. It happens

that its complement was also its contrary, because it happens that a concrete whole is always analysable into two direct contraries, and therefore the process always does go from an idea to its contrary. But it does not go to it because it seeks denial, but because it seeks completion.

But this can now be carried still further. Not only is the presence of negation in the dialectic a mere accident, though a necessary one, of the gradual completion of the idea. We are now led to consider it as an accident which is necessary indeed in the lower stages of the dialectic, but which is gradually eliminated in proportion as we proceed further, and in proportion as the materials from which we start are of a concrete and adequate character. For in so far as the process ceases to be from one extreme to another extreme equally one-sided, both of which regard themselves as permanent and as standing in a relation of opposition towards one another, and in so far as it becomes a process from one term to another which is recognised as in some degree mediated by the first, and as transcending it,—in so far the negation of each category by the other disappears. For it is then recognised that in the second category there is no contradiction to the first, because, inasmuch as the change has been completed, the first is found to have its meaning in the transition to the second.

The presence of negation, therefore, is not only a mere accident of the dialectic, but not even an invariable accident. Its presence, when it does occur, is indeed necessary, but it vanishes as the process goes further, and the subject-matter is more fully understood. It has, therefore, no inherent connexion with the dialectic at all, since its introduction is due to our misapprehension, in the lower categories, of the true nature of the movement.

7. Here, however, we come upon a fresh question, and one of very great importance. We have seen that in the dialectic the relation of the various finite ideas to one another in different parts of the process is not the same —the three ideas of Being, Not-Being, and Becoming standing in different relations among themselves to those which connect Life, Cognition, and the Absolute Idea. Now the dialectic process professes to do more than merely to describe the stages by which we mount to the Absolute Idea—it also describes the nature of that idea itself. In addition to the information which we gain about the latter by the definition given of it at the end of the dialectic, we also know that it contains in itself as elements or aspects all the finite stages of thought, through which the dialectic

has passed before reaching its goal. It is not something which the dialectic reaches, and which then exists independently of the manner in which it was attained. It does not kick down the ladder by which we mount to it. It pronounces the various finite categories to be partly false and partly true, and it sums up in itself the truth of all of them. They are thus contained in it as moments. What relation do these moments bear to one another in the Absolute Idea?

We may, in the first place, adopt the easy and simple solution of saying that the relation they bear to one another as moments in the Absolute Idea is just the same as that which they bear to one another as finite categories in the dialectic process. In this case to discover their position in the Absolute Idea it is only necessary to consider the dialectic process, not as one which takes place in time, but as having a merely logical import. The process contemplated in this way will be a perfect and complete analysis of the concrete idea which is its end, containing about it the truth, the whole truth, and nothing but the truth. And this, apparently, would have been Hegel's answer, if the question had been explicitly presented to him, which does not appear to be the case. For he asserts, clearly and undoubtedly, that the dialectic expresses the deepest nature of objective thought.

But this conclusion seems open to doubt. For the change of method results, as we have seen, from a gradually growing perception of the truth which is at the bottom of the whole dialectic,—the unreality of any finite category against its synthesis, since the truth and reality of each category consists only in its reference to the next, and in its passage onwards to it. If this was not true all through the dialectic, there could be no dialectic at all, for the justification of the whole process is that the truth of the thesis and the antithesis is contained in the synthesis, and that in so far as they are anything else but aspects of the synthesis they are false and deceptive. This, then, is and must be the true nature of the process of thought forwards, and must constitute the real meaning and essence of the dialectic. Yet this is only explicitly perceived in the Notion, and at the end of the Notion—or rather, as I said above, is never completely perceived, but is only an ideal to which we approximate as our grasp of the subject increases. Before this the categories appear always as in their own nature permanent and self-centred, and the breaking down of this self-assertion, and the substitution for it of the

perception that truth is only found in the synthesis, appears as opposed to what went before, and as in contradiction to it, although a necessary and inevitable consequence of it. But if this was really so the dialectic process would be impossible. If there really was any independent element in the lower categories, or any externality in the reconciliation, that reconciliation could never be complete and the dialectic could never claim, as it does undoubtedly claim, to sum up *all* the lower elements of truth.

The very existence of the dialectic thus tends to prove that it is not in every sense objectively correct. For it would be impossible for any transition to be made, at any point in the process, unless the terms were really related according to the type belonging to the Notion. But no transition in the dialectic does take place exactly according to that type, and most of them according to types substantially different. We must therefore suppose that the dialectic does not exactly represent the truth, since if the truth was as it represents it to be, the dialectic itself could not exist. There must be in the process, besides that element which actually does express the real notion of the transition, another element which is due to our own subjective mistake about the character of the reality which we are trying to describe.

This agrees with what was said above—that the change of method is no real change, but only a rearrangement of the elements of the transition. It is, in fact, only a bringing out explicitly of what is implicitly involved all along. In the lower categories our data, with their false appearance of independence, obscure and confuse the true meaning of the dialectic. We can see that the dialectic *has* this true meaning, even among these lower categories, by reflecting on what is implied in its existing and succeeding at all. But it is only in the later categories that it becomes explicit. And it must follow that those categories in which it is not yet explicit do not fully represent the true nature of thought, and the essential character of the transition from less perfect to more perfect forms.

The conclusion at which we are thus compelled to arrive must be admitted, I think, to be quite un-Hegelian. Hegel would certainly have admitted that the lower categories, regarded in themselves, gave views of reality only approximating, and, in the case of the lowest, only very slightly approximating, to truth. But the procession of the categories, with its advance through oppositions and reconciliations, he apparently regarded as presenting absolute truth—

as fully expressing the deepest nature of pure thought. From this, if I am right, we are forced, on his own premises, to dissent. For the true process of thought is one in which each category springs out of the one before it, and not by contradicting it, but as the expression of its deepest nature, while it, in its turn, is seen to have its deepest reality in again passing on to the one after it. There is no contradiction, no opposition, and consequently no reconciliation. There is only development, the rendering explicit what was implicit, the growth of the seed to the plant. In the actual course of the dialectic this is never attained. It is an ideal which is never quite realised, and from the nature of the case never can be quite realised. In the dialectic there is always opposition, and therefore always reconciliation. We do not go straight onward, but more or less from side to side. It seems inevitable, therefore, to conclude that the dialectic does not completely and perfectly express the nature of thought. I shall next endeavour to consider the further consequences of this admission.

V.—THE LAW OF PSYCHOGENESIS.

By Professor C. Lloyd Morgan.

Is there a law of psychogenesis? Is there a common principle which sweeps through the whole range of mental evolution, alike in the individual and in the race? A principle sufficiently general to cover the whole field of consciousness, and yet not so vague as to be meaningless? I believe that there is such a principle; one which applies alike to the simpler inferences of perceptual experience, and to the more complex judgments in matters intellectual, æsthetic, moral. I shall here endeavour to indicate its nature. But it will be necessary first to clear the ground at some length.

The Rôle of Consciousness. Without attempting to enter upon such vexed questions as, What is consciousness? and, What is its relation to man as an organism? I think we may say without much fear of contradiction that the business (or, shall we say, part of the business?) of consciousness is the control of action. If it be not so, if consciousness has no such guiding and controlling power (however exercised), then is it but a by-product; very beautiful and precious, no doubt, but none the less a by-product, an epi-phenomenon, a mere incident and not a factor in the development of organic life. Then is all organic response and conduct brought down to the level of reflex-action. Consciousness is like a little child on a great ocean steamer coming into port. He sits in the bows, and whispering his orders to the figurehead, thinks he is controlling the movements of the great vessel, while all the time he is a mere passenger witnessing the handling of the steamer and only fancying he has controlling power. Such a view seems to me false, if not ridiculous. Consciousness is no mere passenger in the organic ship, but holds the helm.

There is a tendency among certain nerve-physiologists to regard all organic response as of the nature of reflex-action, the differences being only differences of complexity. I strongly suspect, however, that this procedure ought to be reversed, and that we ought more clearly to distinguish between the involuntary reflex-act, properly so called, and a response under voluntary and conscious control. I will reduce to its simplest expression, and represent diagrammatically what seems to me the essential difference between the

merely organic reflex and the organic and conscious response. The reflex-act is initiated by a stimulus which passes through one or more nerve-centres *a* and *b*, and gives rise to the appropriate response

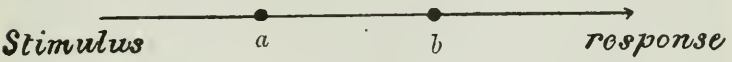


FIG. 1

If consciousness there be in this case it may be regarded as a mere by-product, since it does not influence the resulting action. This is the reflex-act. Now let us introduce consciousness as guiding and controlling

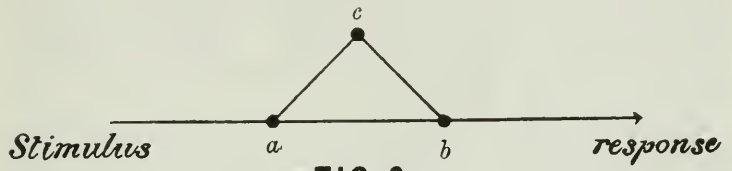


FIG. 2

Here consciousness is developed in the loop-line at *c*, and according to the nature of the controlling consciousness the response which flows out from *b* is either reinforced or inhibited through the channel *c b*.[1] As the consciousness in *c* becomes fuller and more complex by the calling into being of an increasing body of representative states of consciousness, it comes to symbolise in mental terms the occurrences both on the side of stimulus and on the side of response. Thus within the organism which responds in voluntary activity to stimuli there develops an organ *c* which is the material expression of that conscious symbolism under which the activities of the organism are controlled.

When I say then that the rôle of consciousness is the control and guidance of action, I do not mean consciousness as dissociated from the living organisation, but consciousness as associated with, and forming the mental aspect of, certain

[1] This is not the place to attempt a justification of this view. It is sufficient to indicate that in man the cerebral hemispheres of the brain seem, in the main at all events, to constitute the organ of control *c*. The connexion *a c* is formed by such tracts as the "optic radiation," from the "pulvinar" to the cerebral cortex. The connexion *c b* is largely represented by the "pyramidal tract". The "motor centres" mapped out with such success of late years are the centres of conscious and voluntary control (or, in short, control-centres) within the brain, or the channels (funnels) through which such control is brought to bear on lower centres *b* through the pyramidal tract.

transformations of energy in the brain or other organ of control.

The Mechanism of Control. Physiologically control is effected by augmentation or inhibition brought to bear through the channel *c b* and resulting from certain molecular transactions in *c*. Psychologically we know these transactions from the aspect of consciousness. From the psychological point of view, therefore, we may say, that the impulse to a given response is checked by the bringing to bear of other and opposing impulses or motives, or is furthered by the co-operation of other and reinforcing impulses or motives. Accompanying the conflict of opposing impulses or motives there is a more or less painful sense of hesitation, dilemma, uncertainty, indecision. And accompanying the ultimate predominance of one impulse or set of impulses there is a sense of relief, of choice, of decision. Often too there is a sense of effort. We say that we broke the spell of indecision by an effort of will.

According to this view of the matter the stronger impulses at length prevail; in other words, the action takes the line of least resistance. But this may seem contrary to experience. As Prof. James has said: "If a brief definition of ideal or moral action were required, none could be given which would better fit the appearances than this: *It is action in the line of greatest resistance*". How comes it to appear to be action in the line of greatest resistance? Because of the sense of effort which is associated with the final decision. Now this sense of effort most markedly accompanies the newest and most difficult activities; it is distinctively associated with the higher control-centres. Whatever be the psychology of effort, its association with the higher control is a fact of common experience. Suppose that we are drawn towards some natural but immoral action by our lower instinctive impulses; but that we resist the action by a resolute act of will, in obedience to the prompting of a moral ideal. It is the latter and not the former, the ideal motive, not the natural propensity, that is a matter of our control centres. *We identify ourselves rather with the action of our control centres than with our lower animal instincts*, and say that *we* prevail over the instinctive propensity. This association of the idea of self with the higher and most individual control-centres, as compared with the lower instinctive propensities, is the basis of a rational doctrine of free-will. These higher impulses of the individual control-centres we regard as essentially our own, we regard as voluntary; and we associate with them

the motor feelings of effort which accompany the newest, most difficult, most individual activities. A rational doctrine of free-will (which may be held by the most rigid determinist) asserts that the acts we call voluntary are essentially our own, the outcome of the play of our own control-centres; and that, being ours, we are responsible for them.

Mental Symbolism. I said that within the organism which responds in voluntary activity to the stimuli of the external world there develops an organ, in us the brain, which is the material expression of that conscious symbolism under which the activities of the organism are controlled. What do I mean by this conscious or mental symbolism?

As I write I see before me a table with paper, inkstand, books: through the window I see trees, houses, living beings: further off, a rising down, and beyond, a fine background of English cloud. I feel the pen in my fingers and the table on which my hand rests. The air is scented with tobacco smoke. All this is part of the mental symbolism. The play of impressions on my sensitive organisation evokes in my brain a series of neural tremors which have for their mental aspect all that which I have briefly indicated. Thus in consciousness is symbolically represented that which lies outside consciousness.

Here it may be asked whether the symbolic representation can be said to resemble the outside existences which call it into being. I suggest the question merely to disregard it. For the answer is wholly immaterial to my present purpose. Each individual may answer it for himself in accordance with his philosophy or his common-sense. All that I wish to insist upon is that the external occurrences *must be translated into consciousness* ere they can become part of the symbolic series.

It is through perception that I become acquainted with the table, inkstand, books, and so forth; and the objects as presented to consciousness are percepts. We often hear it said that, in the course of evolution, the percepts of living animals and of men have been moulded to the objects of the world in which we live, and this is sometimes more tersely expressed in the dictum that thoughts have been moulded in accordance with things. But both expressions are apt to be misleading. Percept does not answer to object in the sense that the symbol answers to the thing symbolised. For percept and object are alike parts of the mental symbolism. The percept is one aspect of the several possible aspects which the external occasion of perception presents in mental symbolism; while the term "object" is applied to the sum

of the perceptual aspects. Even when there is tacit reference to the external occasion, when we say, for example, that the same object may give rise to different percepts, or may be perceived in different ways, we use the word "object" in shorthand for the phrase "external occasion symbolised as object". Even if the object, as part of the mental symbolism, resembles point for point the occasion of perception, or what calls forth the mental symbolism (and whether this is so or not, is, as I need not remind those who read this journal, a very old bone of philosophical contention), it matters not. It is with the object as part of the mental symbolism that we are dealing in all cases of human perception and observation.

This point is vital to my argument. Suppose that on the surface of a mirror there is faithfully reflected a landscape. In that reflexion we may trace the relations in which the images stand to one another. We may also compare the images with the things imaged. But the relationship of the images, *inter se*, is one thing. The fact that the images resemble external trees, houses, and so forth is another thing. And he who should confuse the two would be committing a serious blunder. Now the reflexion in the mirror is the mental symbolism. The several images are the objects in consciousness, *for consciousness is the mirror*. All we can do is to compare the images, and trace out their relationships to each other. We can never turn round to see whether the images in the mirror resemble the outside occasion of their existence, for this would be to turn our backs on the mirror, consciousness, in which alone we can see anything. Even if, therefore, we are convinced on other grounds that the images in the mirror answer point for point in closest resemblance to their external occasions, it still remains true that, so far as consciousness is concerned, we are restricted to the mental symbolism.

This mirror-analogy is a rough one, and must not, of course, be taken for more than it is worth. It may serve to illustrate and emphasise the fact that our directest percepts, not less than our most refined and subtilest concepts, form part of the symbolic series. Every visible proof and tangible evidence of the practical reality of the things around us is given in terms of perception, in terms, that is to say, of what I have termed mental symbolism. When we wish to verify the existence of any object or the properties of any object, we do so by submitting it to the touchstone of perception.

I have laid special stress upon the symbolic nature of perceptual experience, because it is sometimes supposed that in

psychogenesis we have to try and explain two things: first, the relations of percepts to each other and to concepts; and, secondly, the relations of percepts to objects perceived or external occasions of perception. If what has been urged above is valid, these two things are so radically distinct and different that we should not comprise them under one head, at least without a very clearly distinguishing adjective. We may call psychogenesis within the sphere of mental symbolism "positive psychogenesis," and reserve the term "metaphysical psychogenesis" for the further and totally distinct question of the relationship between the symbolic series as a whole and its external occasion. It is with positive psychogenesis that I deal.

It only remains under this head to indicate that, in addition to the percepts and the intelligent inferences on the perceptual plane which characterise the mental symbolism of man *quâ* organism, there are concepts and rational inferences in the conceptual sphere which conspicuously characterise the mental symbolism of man *quâ* social and rational. Man not only perceives and adjusts his actions to surrounding phenomena in common with his four-footed companions, he also analyses these phenomena through the application of his conceptual thought with the aid of language. He frames theories of things and interpretations of nature; he studies the workings of his own mind and endeavours to explain them; he contemplates the beauty and charm of natural objects and of his own artistic productions, and tries to formulate the principles of æsthetics; he ponders over his relations to his fellow-men, and does his best to understand the conditions of his social existence; he forms an ideal of what he himself should be and of what he desires humanity to become, and endeavours to mould his life and the lives of his fellow-men in conformity with these ideals; he feels the ultimate mystery of the world and of his own being, and frames conceptions of the underlying Cause in conformity with his religious tenets. In all this, or at anyrate in most of it, man differs from all other organisms. And all this, or at all events the greater part of it, man possesses in virtue of his social state, a state in which many individuals are animated with a common aim, and in which these individuals are bound together by strands of linguistic intercommunication.

Psychogenesis and Experience. We give in general the name of experience to the process by which the individual powers of the mind are unfolded. To learn by experience is essentially a process of trial and error. The child in response

to certain external stimuli, or perhaps automatically, puts forth its varying activities. Through the guidance of experience some of these actions are enforced, some checked. This, be it noted, is a matter of control. Experience does not originate the activities; it guides them into suitable channels, selecting those which give satisfaction in consciousness and rejecting those which in consciousness are unpleasant and distasteful.

That the burnt child dreads fire is a proverbial example of the teaching of experience. When first the child sees something bright, shining, alluring to the touch (why it should be alluring to the touch does not concern us here) he stretches forth his hand to grasp. The pain he then experiences becomes thereupon associated with the performance of such action under such circumstances. Subsequently he again sees the bright, alluring object; again there is the tendency to stretch forth the hand and touch; but the representation of the associated pain now modifies the former result. If the memory of the pain be vivid the action may be arrested; if weak it will only be partially checked; pain will again be experienced, and will become for the future more firmly associated with the performance of such action under such circumstances.

Such are the rude teachings of experience in the lower planes of mental symbolism. More subtle is the guidance in the higher plane of intellectual, moral and æsthetic control. But it is the same in principle. Conduct in these regions, however, is more idealised; less under the sway of somewhat rough perceptual inferences; more under the control of reason and conceptual thought. The experience is here more distinctly and obviously subjective. The modest woman is not pure in act through bitter experience of the results of an immoral life. She is pure in conformity with an ideal which is part of her moral nature. Just as the child avoids the fire because it hurts, so does the pure woman shrink from the thought of an immoral act because it hurts. Just as it is part of the child's perceptual nature that he should suffer from contact with certain objects, so is it part of such a woman's moral nature that she should be scorched and burnt by impure thoughts. Experience is self-knowledge. Without experience there could be no conscious selection of those activities which give satisfaction in consciousness, no rejection of those which in consciousness are unpleasant and distasteful. And psychogenesis in the individual involves such a selection among the states of consciousness which constitute the mental symbolism.

Innate Tendencies. But though experience is thus a factor in the development of individual conduct; the performance of certain acts giving pleasure while that of others brings pain, the suggestion of immodest thoughts being found in experience to be repugnant to the moral nature, the acquisition of a new truth being found in experience to give a thrill of satisfaction to the intellectual nature—though, I say, experience is thus a factor in, or, if it be preferred, a condition of, the development of individual character and conduct, many of the activities of organisms, and of man among the number, are directed to more or less definite ends in the absence of and previous to individual experience. The typical instances of these are instinctive activities. An instinctive action is one which is performed prior to and independently of experience, though such action may, of course, be subsequently modified through experience and, in so far as thus modified, cease to be instinctive. Instinctive actions, as such, are not subject to control: control, that is to say, renders them, so far, other than instinctive. In the conduct of men the lower impulses are largely of this order. In many cases we are mere spectators, sometimes astonished spectators, of our own actions. Impulse carries us away, and we can only watch and wonder whither we are driven by organic tendencies. The determinate nature of our actions is by no means entirely a matter of individual experience and guidance, but is largely the outcome of innate tendencies. What occurs under experience is a selection from among the existing innate tendencies of special modes of response which are in conformity with the individual nature. These special modes of response, thus selected, then set and become habitual. A habit is a response well-organised through the guidance of individual experience. As the organisation increases the guidance diminishes and the necessity for conscious control ceases. Thus habits ingrained by individual repetition may come to simulate instincts not acquired by the individual but innate.

We next proceed to ask: Whence come the innate tendencies? How comes it that in the individual there already exist a body of determinate or indeterminate impulses from among which, through experience, selection is made?—In doing so we pass from development in the individual to development in the race.

Psychogenesis and Use-inheritance. We have seen that under the selective influence of individual experience certain activities are developed and organised and pass into habits. We inherit the germs, or, one may say, the more or less de-

veloped embryos of faculty, and these may be developed to a greater or less degree through experience. Thus the muscular power of the athlete is increased through training and use; and in the mathematician the faculty of dealing with numerical relations and the symbols by which they are expressed. Take any two individuals with similar musical faculty: the one cultivates the faculty; the other lets it lie dormant. In the one the faculty is perfected within its limits; in the other it remains comparatively undeveloped. These are familiar facts; and we may express their teaching by saying that, in the individual, use develops faculty.

When therefore we come to ask how innate faculties and determinate tendencies to activity have been developed in the race the simplest and most tempting answer is: By inherited experience. An instinct is thus an inherited habit. According to this view the increased muscular power of the athlete, the enhanced mathematical faculty of the man of science, the developed musical ability of the pianist, are to some extent handed on as a legacy to their children. Modified and perhaps enriched by the individual experience of the legatees, the legacy is again handed on to succeeding generations; and thus, through the steady addition of increments individually acquired and transmitted to offspring, there is a progressive development of faculty in the race, and each individual comes into the world with a greater potentiality for individual development.

This is undoubtedly a very pretty and pleasing scheme. But of late the actual occurrence, and even the possibility of any such inheritance of acquired increment of faculty, has been seriously questioned, and by many able biologists stoutly denied. No matter by how much the athlete increases his biceps, no matter how fully the mathematician develops his splendid faculty, the children subsequently born to them are, it is maintained, none the better for their pains. Faculty in general is in the same position as particular applications of it: the boy does not know his fifth proposition of Euclid because his father knew it before him; nor does he learn it any the easier for his father's long devotion to mathematics. Had his father devoted his life to billiards instead, his son would have learnt that proposition none the less easily.

Which of these strongly opposed views is correct; whether "use-inheritance," as it has been conveniently termed, is fact or fancy, I will not here attempt to decide. It is a matter that is still *sub judice;* one that is very hard to settle by experimental evidence or direct observation, and one on

which we must not dogmatise one way or the other. It will have to be decided mainly on biological grounds, and we must be content to await conclusive biological evidence for or against it.

In any case so far as organic evolution is concerned, and psychogenesis is from our point of view closely associated with organic evolution, this use-inheritance is, if established, admittedly only one factor. Another factor, regarded as dominant by most biologists, is natural selection.

Psychogenesis and Natural Selection. I need not describe the mode of action of natural selection. It is based upon the law of increase, the law of variation, and the struggle for existence: the law of increase, that many more individuals are born than survive to procreate their kind; the law of variation, that these individuals are not all alike; and the struggle for existence, by which those who fall below mediocrity are eliminated, while those who excel, interbreeding with average individuals, tend to raise the standard of mediocrity in the succeeding generation. A wolf-spider and his wife are cunning in their artful stalking of unwary flies. They have a numerous family. Some are inferior in cunning to their parents, some equal them, a few excel them. But flies are scarce, and there is not enough food for all. Only two can get a living, but these two are just the most cunning of the whole brood. Of the numerous family produced by these selected individuals, only two again survive to continue the race, and they the very cleverest of the lot. They have not inherited any cunning *individually acquired* by their parents, but they are the terminal products of a series of fortunate variations in the direction of cleverness.

It is clear that there is no inherited experience here. The relation of this process of natural selection to experience seems indeed to be this. Learning by experience in the individual is a process of trial and error, erroneous response being checked. Learning by experience in the race is also a process of trial and error, individuals who failed to accommodate themselves to their surroundings, as the result of their individual experience, being eliminated. In the one case erroneous responses, in the other erroneous respondents, are eliminated. There is no inheritance of experience, on the view above indicated, but those individuals who best profit by experience are selected and transmit their ability so to do.

Now what is the relation of natural selection to psychogenesis or the development of mental symbolism? If we say that it has been a factor and a most important factor in

its development, we must be clearly understood to mean by development, guidance along certain lines, not origin or initiation. Though the struggle for existence may have caused the elimination of those individuals in which the mental symbolism was relatively imperfect or deficient, natural selection does not give us the law of its internal development.

What is the function, if one may so say, of the mental symbolism in the animal world? To enable the organism so to guide its actions as to resist elimination, to live out its full span of life, and to procreate its kind. Those organisms in which this function is performed in the most efficient manner have survived through the operation of natural selection. Be it so. But the power of efficient control must have been *there*, given in the organism, ere it could be selected. Every advancing step in the development of mental symbolism and of the control it rendered possible must have been *presented to* natural selection, was not in any sense *evoked by* natural selection.

This, it may however be said, is nothing special and peculiar to the mental symbolism: it is true of every organ and of every function which has reached excellence or relative excellence through survival. The fittest survive through natural selection: but what is the mode of origin of the fit? Favourable variations are selected: but how about the origin of the variations? These are questions which are daily asked and can hardly be said to have received satisfactory answers.

All this I grant, nay more than grant, I am prepared to urge. But that is perhaps all the greater reason why we should endeavour to find the law of psychogenesis—the principle which guides and has guided the development of mental symbolism apart from the physical elimination of natural selection.

Natural Selection and Social Evolution. Granting that natural selection is a dominant factor in organic evolution, is it also the dominant factor in social evolution? I believe that in modern phases of social evolution natural selection holds a quite subordinate place.

So much is said and written about the social struggle for existence; so largely does competition enter into all phases of social procedure; so conspicuously does the principle of selection, and election, meet us at every turn; that it may seem somewhat absurd to contend that natural selection holds quite a subordinate place in social evolution. If not natural selection, it may be said, at anyrate a strictly analogous process is not subordinate but dominant.

Is the process strictly analogous? I think not. What is the method by which progress is secured by natural selection? The elimination of failures, that is to say of all those individuals who fall below mediocrity, or their exclusion from all participation in the continuance of the race. Is this true of social evolution regarded as a whole? Are the failures eliminated? Are they excluded from all participation in the continuance of the race? Do not the social problems of the day largely arise out of the fact that the social failures are *not* eliminated but are here in our midst, and that they multiply exceedingly? Are not the checks to increase of population mainly prudential? And are not the prudent —those who look before they leap into marriage—for the most part those who are *not* social failures? It is just because natural selection, or the elimination of the unfit, is not and cannot be the law of development in a civilised social community, that we are surrounded on all sides with the most difficult social problems.

Or look at the matter from a slightly different standpoint. No account of social evolution would be complete which did not comprise a consideration of progress in Art, Science, Literature, Morality. Now I do not believe that anything analogous to natural selection, any process of eliminating the unfit, has been the dominant factor in the evolution of any of these higher phases of social endeavour. An important factor it has certainly been in preserving some of the *products* of these higher phases of human thought. The works of Shakespeare and Milton, of Hooker and Bacon, of Newton and Darwin, of Locke, Hume and Berkeley remain, while a host of inferior writings have been eliminated. But I question whether the genius of Shakespeare or Milton, the scientific insight of Newton or Darwin, or the philosophic penetration of Hume or Berkeley were the outcome of any process which can with any approach to accuracy be regarded as analogous to the elimination of the unfit by natural selection. I fail to see how the *Elijah* of Mendelssohn or the *Assumption* of Titian could be the result of any process of physical elimination.

This word "physical" perhaps best touches the quick of this question. Natural selection through elimination is essentially a physical or organic process; and my contention is that in social evolution we are mainly concerned with a psychical or mental process. Not the law of organic development but the law of mental development, of psychogenesis, is dominant here.

Psychogenesis and Sexual Selection. Natural selection

proceeds on the supposition that those who escape elimination in the struggle for existence mate together indiscriminately. This is not the case in human civilised society. Whatever may be true of the lower animals, among mankind selective mating is a fact of the very utmost importance. And its special importance, in regard to our present theme, lies in this: that, at its best and highest, it is essentially a psychical and not merely an organic process. It is a process by which man is consciously or unconsciously giving physical or organic expression through heredity to his highest ideals. For in marriage at its best and highest the man selects his ideal woman, her in whom beauty and grace, physical, moral and intellectual, are embodied; and the woman selects her ideal man, conspicuous among men for beauty and strength of mind and body. Herein lies the value, from the evolution point of view, of our marriage system. The more enduring the marriage bond the more careful will the contracting parties be to select wisely and well, looking not merely to immediate gratification but to life-long association. And if there be any truth in heredity this must have an important effect on the race; not indeed on the community as a whole, except in so far as there is elimination, but on its highest representatives physically, morally and intellectually.

Sexual selection then differs from natural selection in this: that whereas natural selection is a process by which is effected the physical elimination, by death or failure to procreate their kind, of those who fall below mediocrity; selective mating is the giving expression to certain preferences or ideals. By natural selection all are plucked in life's examination who do not reach a certain standard of excellence: by selective mating particular individuals are picked out by an act of selective choice. Natural selection has guided the mental symbolism to certain developments by eliminating those in whom these developments were absent: selective mating is a product of the mental symbolism so developed. It is itself the outcome of psychogenesis. And however important it may be as a factor in social development it is rather the result of than the cause of the higher phases of mental evolution.

The Law of Truth. In seeking an answer to the question: What is the law of psychogenesis? it will be well to start from the higher and more abstract region of concepts and work our way downwards to the more practical level of percepts; and then, having found certain subsidiary laws or principles, to see if there does not run through these a single basal law or principle.

What is the guiding principle of development in intellectual matters? I would call it the *law of truth.* In the course of my reading and of my converse with my fellow-men I find the facts of nature and of human conduct and experience interpreted in a number of different ways. Some of these interpretations I unhesitatingly accept as true; others with as little hesitation I reject as false; many I ignore or relegate to a suspense account. On what grounds do I at once accept certain interpretations and reject certain others? It is often difficult to give, off-hand, the specific grounds of acceptance or rejection. But it practically comes to this. I accept what is in accordance with my own views and theories: I reject what is contrary to my own scheme. I relegate to a suspense account, or ignore, what neither accords fully with my system of interpretation of nature, of life and of man, nor actually conflicts with that interpretation. I neither accept nor reject what seems to be irrelevant.

A bare-faced confession of prejudice! But observe that I am for simplicity's sake supposing that my interpretation is constant. I most sincerely hope, however, that it is capable of development, and that such prejudice as there is is the healthy prejudice that comes of long and honest study. Suppose then that I am led to accept a view which is not in strict accordance with the views I held yesterday. Does not this imply that my opinions have altered so as to embrace the new view? And is it not still true that I accept what is in accordance with my own theory—not my theory of yesterday, but my modified theory of to-day? The very fact that the new view could not be accepted without modification of my theory of things, emphasises the point which I desire to bring out, that what is accepted must be in accord with the system into which it is incorporated. In every mind, as intellectual, this process is going on. The true is accepted, the false rejected; the rest more or less ignored. No man consciously accepts the false, or rejects the true.

What, it will be said, no one reject the true, no one accept the false! This, at anyrate, is an interpretation of the facts which we may unhesitatingly reject as false. But before you reject, my friend, be sure that you understand. I do not say that no one rejects what *you* regard as true, or accepts what *you* regard as false. That would, indeed, be absurd. I say that no one accepts what *he* regards as false, or rejects what he regards as true—a very different matter. To say that any one believes what he deems untrue is a contradiction in terms. What, then, in the individual mind, is the criterion

of truth and falsity? I reply, congruity or incongruity to the existing intellectual system as developed in that mind. An explanation of a given occurrence which is in congruity to my system of interpretation of nature I accept. If the explanation is incongruous, I reject it. If a lady pricks her finger with a darning needle, and attributes it to having spilled salt at luncheon and omitted to throw some over her left shoulder, this explanation is for her, no doubt, the true one. For me it is false, because it is not in congruity to my mode of interpreting such occurrences. In different minds widely different systems of interpretation grow up. The man of science, as such, the poet, as such, the mystic, as such, view the world with different eyes. Each has his special theory of things. But each, as an intellectual system, is self-congruous. Each has developed by the selection of the congruous and the rejection of the incongruous.

The Law of Beauty. In æsthetic matters, what may be termed the *law of beauty* is the guiding principle. That only can be accepted as beautiful which is in congruity to the æsthetic nature. The æsthetic nature may change; what was once regarded as beautiful may in after years make one shudder; in what was once regarded as indifferent we may learn to see a gem of art; but at any moment in the process of development, only that could be accepted as beautiful which was in harmony with the individual taste at the time. It is generally admitted that there is no arguing about matters of taste. Things are for me beautiful or ugly, pleasing or displeasing, tasteful or the reverse, according as they are congruous or incongruous to my nature as æsthetic. You cannot make a thing beautiful to me as it is beautiful to you without altering my whole æsthetic nature. You cannot persuade a man to prefer the third *Léonora* overture to *The Bogie Man*. We agree that there is no arguing about taste. Why? Because you are not likely by argument to modify the æsthetic nature. It is nearly, but not quite, as true that there is no arguing about intellectual matters—as between, for example, a positivist and a Hegelian. You cannot persuade a poet on the one hand, or a metaphysician on the other, to accept a scientific interpretation of nature, because he cannot do so without changing his whole intellectual nature. Both the true and the beautiful are questions of congruity to the mental nature.

The Law of Right. In matters of ethics the *law of right* is the guiding principle. This is accepted as right, that is rejected as wrong, according as each is congruous or incon-

gruous to our moral nature. The sense of congruity or incongruity is what we term the voice of conscience.

As in intellectual matters, and as in questions of æsthetic taste, so too in ethical problems it is often exceedingly difficult to give a specific answer to the question: Why is this or that right or wrong? The woman's answer, Because it is, and there's an end on't, is really not far astray. A thing is right for me because it is in accordance with my moral nature, because it is what it is, and I am what I am, and it and I vibrate in unison. The thought pulsates true with my thought. The act is in harmony with my ideals.

It is untrue to fact to say that there is only one possible self-congruous ethical system. As there are different interpretations of nature, as there are different standards of taste, so there are different ethical ideas. We cannot frame a universal scale of right and wrong. Dr. Martineau gives a hierarchy or ascending scale of passions, appetites, affections, and sentiments, and says: "Every action is *right* which, in presence of a lower principle, follows a higher; every action is wrong which, in presence of a higher principle, follows a lower". The hierarchy expresses his own ideal scale, but, as a matter of fact, it is individual and not universal. We cannot frame a universal scale. If we say that our own scale ought to be universal, we are only expressing our own ideal. I am not, of course, saying that there is not an interpretation of nature truer than all others, an ethical system nearer than all others to the perfect right. I only say that we know not at present which interpretation of nature, which ethical system is the truest and most right; and that there are in existence several rival interpretations of nature and many rival ethical systems, which are perfectly self-congruous in the eyes of those who hold them.

In opposition to the principle of congruity some one may lay stress on the constant discrepancy between theory and practice in matters of right and wrong. "The pity of it is," he may say, "that incongruous as it may be to his moral nature man is constantly doing that which he knows to be wrong. It may be true that no one can believe what is, from his point of view, untrue, or admire what is, in his eyes, ugly; but he constantly does what he feels to be wrong." This is perfectly true. And it is due to the fact that moral considerations are not, as man is at present constituted, the only, nor always, by any means, the more powerful, incentives to action. The brute performs a number of actions which are conformable to his nature as sensual; and man is still largely a brute. If a man is sensual rather than

moral his actions will be in conformity with his sensuality rather than his morality. And this is in complete accord with the principle I am advocating, that what is congruous to the mental nature of the individual is selected, and what is incongruous thereto is rejected.

Moreover, under different external circumstances and different internal states of the bodily organisation, our natures fluctuate to and fro within limits which vary in different individuals. In moments of excitement we are different beings from ourselves in moments of calm contemplation. And we therefore react differently. There are periods when the organisation of the drunkard or the sensualist cries aloud for the satisfaction of the craving by the performance of acts in conformity with the state of heightened sensuality. If the sensual desires be satisfied this element of the nature retires into the background, and moral considerations gaining predominance, the individual, reviewing his conduct, is covered with shame and remorse. The acts in congruity with the heightened sensual state excite loathing and disgust in the succeeding state of increased moral sensibility.

Conduct and Verification. Apart from such cases as those just alluded to, in which there is conflict between moral ideals and the lower impulses of our nature, there are many cases in the practical conduct of life when consistently to act out our highest moral ideal is impracticable. We may feel that war is repugnant to our moral nature, but at the same time urge the efficient maintenance of our army and navy and their vigorous employment in cases of national necessity. The guiding principle in these cases is practical expediency, or the congruity of actual conduct to the existing social or other conditions. The practical reformer is he whose social ideals are not merely utopian and subversive of the existing order of things, but exhibit a graduated series of practically possible steps from the existing system to an order of things ideally better. The ideal system[1] must not only be congruous within itself, but must be in touch with the actualities of life and conduct.

Similarly of intellectual systems or interpretations of nature. Not only must they be congruous in themselves and on the conceptual plane of intellectual ideas, they must

[1] I am here speaking of the practical carrying into effect of social reform. There is a great difference between the ultimate ideal which we only hope may some day be reached, and the practical ideal which we may see realised to-morrow.

be, and are in all cases held to be, congruous to perceptual experience. The ultimate appeal in all cases is to perceptual experience. To this plane must conceptual conclusions be brought down that they may undergo the test of verification. Not only must ideas and theories be congruous to other ideas and theories, but they must be in congruity to percepts. From percepts have concepts arisen by analysis and abstract thought and reason; to percepts must the results of analysis and abstract thought conform to satisfy the final test of congruity.

Here again the principle I am advancing may seem to be incongruous to actual facts. The concepts of primitive folk, of savages, of the uneducated, of faddists, have certain practical perceptual implications which *we* see clearly enough, and which when submitted to the perceptual touchstone, are shown to be false or incongruous. But in these cases the individual concerned either fails to apply his concepts to the perceptual touchstone, or fails to see the conflict between theory and practical experience which is to us so obvious, or introduces new concepts which make the test for him of none effect.

The last is a very common case, which I may roughly illustrate. The individual concerned is, we will suppose, a spiritualist. At a dark séance, while the medium lies entranced, tambourines are heard, played, it is said, by spirit agency. It so happens that a scientific wag has blackened the tambourines. And when the séance is over and the lights turned up, it is found that the medium is all besmudged with lamp-black. The scientific wag regards this as proof presumptive that the medium played the tambourines. Does this perceptual evidence convince the spiritualist? Not so. A spiritualistic concept is introduced and the whole affair made congruous to spiritualistic views. For is it not a well-known law, that anything which happens to the spirits during a séance is transferred to the medium through whose agency they were manifested? By the introduction of new assumptions it is very easy to make perceptual experience fit in with any theory which an individual may chance to hold.

There are, moreover, certain highly abstract concepts and theories which are very hard to bring down to the touchstone of perceptual experience. Such are the concepts of metaphysics. And there are certain minds which normally live and move in an atmosphere of conceptual thought. They are often impatient of verification, and have little faculty of testing the congruity of concepts to percepts. I met a

man of ability some time ago, who had been lecturing to working-men on physiology. He had scarcely ever seen a dissection, made an experiment, or examined a microscopic preparation. He found that doing so only confused his ideas! His mind was speculative and metaphysical; and he was troubled with utopian schemes of social reform. Very different is the scientific mind which is restless in its endeavour to apply the criterion of perceptual verification.

This constant demand on the part of science for practical perceptual verification is justified by the essential unity of consciousness, the solidarity of the mental symbolism, and the continuity of its development. According to the scientific interpretation of life and mind (which we must remember is only one out of several congruous systems) not only must the conceptual inferences be conformable to each other but they must stand the test of verification in the perceptual plane. The congruity must sweep through the whole range of mental symbolism from the lowest percept to the highest concept. Any incongruity between concept and percept is in the eye of the scientific mind fatal to the former; in the eye of the metaphysical mind not infrequently fatal to the latter.

Thus we come down to the practical perceptual plane. What is the guiding principle of development here? Many will answer the congruity between percept and object, using the word object for the external occasion of perception as it exists independently of the percipient. If so, we are here going outside the mental symbolism. But I have endeavoured to show that this way of putting the matter is unsatisfactory and misleading. Not the congruity between percept and object (so-called) but the congruity between percept and percept is the law of the mental symbolism in this plane. The percept evoked by the sight of my favourite pipe suggests certain perceptual inferences which I intend ere long to submit to practical perceptual verification.

In this perceptual sphere, as indeed throughout the whole range of mental development, the guidance of pleasure and pain is of great importance—so great that some are found to argue that in moral matters we are influenced solely by considerations of happiness. Our nature is not only intellectual, æsthetic, moral; it is also sensitive. And as the false is rejected as incongruous to our nature as intellectual; as the ugly is avoided as incongruous to our nature as æsthetic; as the wrong is shunned as incongruous to our nature as moral; so is the painful, so far as possible, avoided as incongruous to our nature as sensitive. Only by

extending the meaning of the words pleasure and pain so as to be coextensive with what I have here termed congruous and incongruous can it be said that all our actions and our thoughts are determined by pleasure and pain.

The Law of Psychogenesis. Enough has now been said to indicate what I regard as the law of psychogenesis. As in the case of natural selection, properly understood, it is a law of elimination—the elimination of the incongruous. It applies not only to the relations of concepts *inter se*, but to the relations of concepts to percepts, and of percepts to other percepts. It sweeps through the whole gamut of mental development. It is a law of the assimilation or incorporation of like with like. Progress is effected by the elimination of the incongruous.

Assimilation presupposes an environment of that which is capable of assimilation. And the environment in which mind develops is a mental environment. That is a fact too often lost sight of. Consciousness never comes in contact with aught but other facts of consciousness. The mental symbolism is one and continuous and self-contained. There is no getting outside it. If mind does grow up in correspondence with something that is not mind this is a matter of metaphysical psychogenesis, not of positive psychogenesis with which alone I am now concerned. From the positive point of view mind develops in conformity with a mental environment and with that alone—an environment of percepts directly suggested from without and of concepts growing out of perceptual experience or suggested through inter-communication with our fellow-men. And the environment is not unchanging, but is itself subject to development. Each thinker not only has his thoughts moulded by the intellectual environment but reacts upon it, making it for the future something different from what it was. The thinker in any department of knowledge brings his mind into contact with all that is best in human thought and endeavour in that department. He thus finds his true environment and endeavours to make it more congruous by further elimination of incongruities. That I feel sure is how science has advanced. First the congruous system is allowed to take form in the individual thinker's mind by the assimilation of all that is best in the work of his precursors; by the rigorous application of scientific method and verification some of the remaining incongruities are eliminated; and then through the thinker's influence the amended and extended system is impressed on the science and philosophy of his time and of all after time. The environment is henceforward no longer

the same. This I could amply illustrate; but not here and now.

The environment is henceforward no longer the same. This constant change—for the better as we hope—of the environment of the developing mind makes it exceedingly difficult, if not impossible, to test the truth of the theory of use-inheritance, already adverted to, in the matter of the mental faculties of man. Take the case of two men with equal mathematical faculty, of whom the one develops the faculty while the other devotes his life to billiards. Putting aside the fact that this development of the faculty in the one case and not in the other is very probably itself the outcome of an innate tendency—putting aside this I say, the son of the former grows up under the influence of a mathematical atmosphere, the son of the latter amid the clatter of billiard balls. If then the son of the former develop into a better mathematician than the son of the latter, who shall say that it is the inherited increment of faculty and not the influence of a mathematical environment that has produced this effect? And, in general, if the mean level of intellectual and moral attainment to-day is higher than it was a generation or two ago, how can we tell that this is not the result of development in harmony with a higher intellectual and moral atmosphere rather than the effect of the inherited increments of faculty? Who shall say that this is not how the acquired increment tells on the race, and not through direct heredity? I am not saying that it is so. But I say that all the facts must be taken into consideration.

It will of course be observed that in contending that the law of psychogenesis is a law of development by the elimination of the incongruous, I am not pretending to account for the origin of the congruous. Just as natural selection accounts for organic development by the elimination of the unfit, but makes no pretence, or should make none, to account for the origin of the fit (which is a distinct problem), so do I suggest that mental development results from the constant elimination of the incongruous; but I make no pretence that it accounts for the origin of the congruous. It is a theory of survival, not of origin.

I had intended here to say somewhat further concerning the relation of physical elimination under natural selection to the psychical elimination of the incongruous. During the early phases of organic evolution the two went hand in hand. In the evolution of man they widely diverge. Physical elimination, as I have contended, becomes a less important factor: the elimination of the incongruous (espe-

cially that which is incongruous to the social ideal) becomes more and more the law of progress. I have not space to trace the matter further; but I have elsewhere[1] said somewhat on this head.

Lastly, I must say a word, but not all that I had intended, on the relation of the law of psychogenesis to the Freedom of the Will. The process, as I conceive it, is one of the elimination of the incongruous, a process analogous, though in a wholly different plane, to that of natural selection. Mental development is the result of a continuous process of selection by the control centres. But I have contended that we constantly identify ourselves with the special action of these control centres. We claim such action as especially and distinctively our own, as the product of our own volition, of our free-will. Hence we may say that psychogenesis through selection is the outcome of free-will, *as thus regarded;* a conclusion which ought to, but is not the least likely to, satisfy both determinists and indeterminists.

Be this as it may, we can perhaps all agree that it should be our practical endeavour to raise the intellectual and moral tone of the community by effecting the elimination of such incongruities to the social nature as falsity, misery, squalor, destitution, vice and immorality; and the assimilation into the social conscience of ideals of truth, justice, happiness, beauty and purity.

[1] *Animal Life and Intelligence*, pp. 483, 484.

VI.—DISCUSSIONS.

THE FEELING-TONE OF DESIRE AND AVERSION.

By Professor H. Sidgwick

In an article on "The Physical Basis of Pleasure and Pain" which appeared in the last number of Mind, Mr. H. R. Marshall has expressed, briefly but decidedly, a view of the quality or "feeling-tone" of Desire, Aversion and Suspense. This view differs very markedly from that to which I have myself been led by a comparison of my own experience with what I have been able to ascertain of the experience of others. Mr. Marshall has taken note of the difference, and subjoined to his brief statement of his own view a polemical reference to mine, written with a rhetorical emphasis which indicates a strong conviction that his view is in harmony with the general experience of mankind. It is possible that this conviction may turn out to be well-founded: but I think that at anyrate some further discussion of the point at issue may perhaps reduce the amount of disagreement between us. I propose accordingly in the present paper to explain the grounds on which my opposite view was founded, with more fulness than I thought appropriate in the treatise to which Mr. Marshall has referred.

As I shall have occasion to direct close attention to one or two of Mr. Marshall's phrases, I will begin by quoting in full the passages in his article that are important for my present purpose.

"The important mental state which we call Desire . . . clearly involves a very important thwarting of the impulse to go out towards an object more or less vividly presented. Under such conditions we should find Desire painful, and there can be no doubt that it is invariably so. It is a complex state, however, which involves other elements than those which bring about the thwarting pain, and these other elements which involve pleasure often mask the pain. . . . Aversion is a state kindred to Desire. It involves thwarted impulses relative to our separation from an object, and should bring pain of a broad kind. This pain is always found as part of an aversion, although at times difficult to isolate from other ever-present painful elements; *e.g.*, the painful representation of an object which will be painful if realised."

Now if I had had to interpret this passage in its context, apart from the polemical reference to myself in a note, I should not have felt strongly moved to disagree with it; because—as I shall presently explain—I should have thought that Mr. Marshall was knowingly using the terms Desire and Aversion in a narrower sense than that in which they are ordinarily used. But this

interpretation seems to be excluded by the following polemical note:—

"Prof. Sidgwick in his *Methods of Ethics* (4th ed., pp. 182 ff.) says that he recognises 'cravings which may be powerful as impulses to action without being painful in any appreciable degree'. He actually speaks (p. 185) of 'the neutral excitements of Desire, Aversion, Suspense, Surprise'. Concerning surprise I have a word below. Here I must be allowed to say that *I* cannot see how a 'craving' can be held to be powerful as an impulse to action without being appreciably painful. As I analyse such states of mind, the so-called neutral excitement which makes the fulness of such states is in mental regions apart from the 'craving'. With certain of our most powerful cravings, for instance, there are the general conditions of high activity which joy implies—there are certain emotional elements of unrestricted love—and these and kindred states we must carefully eliminate in the consideration of the craving proper. The man who hungers gets an impulse to activities from his painful craving, which activities may so far absorb attention as to cover the craving itself entirely. To understand how Desire, Aversion, and Suspense can appear as neutral excitements to any man, requires the postulation of a degree of 'philosophic calm' which has lost Desire in that 'apathy' towards which the Greeks aimed, which has displaced all fear by an almost fatalistic trust, and which has learned to feel that, whatever the outcome of doubtful conditions, that outcome must be good."

It is evident from this passage that, in Mr. Marshall's view, the kinds of feeling which common usage denotes by the words Desire and Aversion are in no cases "neutral excitements" but always painful. It is, then, against this sweeping statement that I propose now to argue.

Before giving my arguments, I should like to limit the field of controversy on two sides. In the first place, I am not at present concerned to maintain that there are, strictly speaking, any "neutral excitements". I am aware that many hold with Mr. Sully[1] that all feeling is pleasurable or painful in some degree: and although my own experience leads me to an opposite conclusion, I do not wish to complicate the present discussion with any controversy on this point. I do not here deny the proposition that Desire and Aversion, if not at least faintly painful, must be at least faintly pleasurable: what I am concerned to maintain is that these feelings are often *either* neutral *or* pleasurable, and certainly not appreciably painful. Secondly, in endeavouring to observe again the personal experiences on which this contention is primarily based, in order to ascertain, if possible, exactly where the disagreement lies between Mr. Marshall and myself, I have felt somewhat embarrassed by my opponent's

[1] See MIND, No. 50, pp. 248-255. I may say that I am inclined to adopt Mr. Sully's view to a greater extent in the case of Suspense and Surprise than in the case of Desire and Aversion. It is partly for this reason that I confine my attention to the two latter in the present paper.

qualification of his doctrine, which admits Desire to be a "complex state containing pleasurable elements which mask the pain". I do not quite know how far this "masking" is supposed to go: and whether he conceives it possible for a pain to exist which the person feeling it does not recognise as such. At anyrate, in the present discussion I shall assume pain so successfully "masked" to be non-existent: and, on this assumption, I must affirm that I still find Desire, in my own case, to be more often than not an element not itself painful—and often a prominent element—in a feeling that as a whole is pleasurable.

I am inclined to explain the opposing view by a combination of four different methods. Firstly, I think that there is some difference in *definition*;—that we do not use the term "desire" in quite the same way.

Secondly, I think that there is a certain tendency to confuse —or too closely assimilate—the ideas of Desire and Pain, owing to a real resemblance between the two, which I will presently endeavour to state precisely.

Thirdly, I think that my opponents are apt to attend too exclusively to specially marked cases of desire; for I admit that when desire is most prominent in consciousness it is most frequently also painful.

Fourthly, I think it probable that there is a real difference in the susceptibilities of different individuals; and that the proposition that desire is painful is at anyrate more true of some persons than of others.

I. First, then, as to the difference of definition. It will be observed that Mr. Marshall says that desire involves a "thwarting of the impulse to go out towards an object". If this only means that desire involves the presence of an unrealised idea, of which the realisation would involve the extinction of the desire, I should agree that this is characteristic of all desire: but the phrase may be equally taken to imply that action for the attainment of the desired end is prevented,—in which case the characteristic only belongs to some desires and not to all. I notice this ambiguity, because I find it also in Dr. Bain's book on *The Emotions and the Will*, where it seems to me to lead to a rather confusing statement of opinion on the present question (p. 423). Chapter viii. of this book begins: "Desire is that phase of volition, where there is a motive and *not ability to act on it*". This certainly seems to imply that desire is only found where action tending to the realisation of what is desired is prevented: and Dr. Bain's illustration suggests the same idea. He says:—

"The inmate of a small, gloomy chamber conceives to himself the pleasure of light and of an expanded prospect: the unsatisfying ideal urges the appropriate action for gaining the reality; he gets up and walks out. Suppose now that the same ideal delight comes into the mind of a prisoner. Unable to fulfil the prompting, he remains under the solicitation of the motive; and his

state is denominated craving, longing appetite, desire. If all motive impulses could be at once followed up, desire would have no place; . . . there is a bar in the way of acting which leads to the state of *conflict*, and renders desire a more or less painful frame of mind."

This certainly seems to mean "all desire is painful, *because* desire implies a bar in the way of acting".

Hence when Dr. Bain goes on to say that "we have a form of desire in all our more protracted operations or when we are working for distant ends," it is not clear whether he means to affirm *this* species of desire to be painful, or, if so, why he means to affirm it: yet he goes on to speak of desire generally as a "form of pain".

Now I agree that desire is most frequently painful in some degree when the person desiring is inhibited from acting for the attainment of the object desired. I do not indeed think that even under these circumstances it is always painful: especially when it is accompanied with hope, and when though action for the attainment of the desired object is not possible, still some activity adequate to relieve the strain on the nerves is possible. Still I admit that when action tending to fruition is precluded, desire is very liable to be painful.

But it is surely contrary to usage to restrict the term Desire to this case. Suppose Dr. Bain's prisoner becomes possessed of a file, and sees his way to getting out of prison by a long process, which will involve, among other operations, the filing of certain bars. It would surely seem absurd to say that his Desire finally ceases when the operation of filing begins. No doubt the concentration of attention on the complex activities necessary for the attainment of freedom is likely to cause the prisoner to be so absorbed by other ideas and feelings that the desire of freedom may temporarily cease to be present in his consciousness. But as the stimulus on which his whole activity ultimately depends is certainly derived from the unrealised idea of freedom, this idea, with the concomitant feeling of desire, will normally recur at brief intervals during the process. Similarly in other cases, while it is quite true that men often work for a desired end without consciously feeling desire for the end, it would be absurd to say that they never feel desire while so working. In short, it must be allowed that the feeling of Desire is at anyrate sometimes an element of consciousness coexisting with a process of activity directed to the attainment of the desired object, or intervening in the brief pauses of such a process: and I venture to think that when the feeling is observed under these conditions, it will not be found in accordance with the common experience of mankind to describe it as essentially painful. I do not affirm that under such conditions it is in itself pleasurable: I cannot carry my introspective analysis to such a pitch of refinement as would enable me to affirm this with confidence.

What I do confidently affirm, as regards my own experience, is that the feeling of desire under these conditions, while not itself painful, is often an indispensable element of a complex state that as a whole is highly pleasurable. And all that I can learn of the feelings of others would lead me to think that I am not singular in this experience.

Take the case of an ardent mountaineer who wants to get to the top of a peak: desire is no less clearly an element of his consciousness when he is walking up the mountain than when he is kept at home by the weather: but in the former case it is at worst a neutral feeling and often seems to take on a pleasurable quality,—at any rate the pleasurableness of the whole state of which it is a part depends upon the presence of the desire: while in the latter case it is certainly most likely to be painful. Take, again, the case of hunger: the conscious desire to which we give this name does not change its fundamental character, does not cease to be hunger when the hungry man sits down to dinner. But it would surely be absurd to say that it is then ordinarily a painful element of feeling: it would only be so after an abnormally long fast. Perhaps Mr. Marshall would say that it is "masked" by pleasurable anticipation of proximate satisfaction: if so, I can only say that the masking is so complete that my introspective analysis fails to penetrate it.

II. I admit, however, that hunger, and desire generally, have a certain degree of similarity to pain, in that they are both *unrestful* states: states in which we are conscious of an impulse to get out of the present state into a future one. To use a term of Locke's, we may fairly say that both desire and pain are "uneasy" states, and thus under this common notion of uneasiness or unrest we may be led to confound the two. But I think reflexion will show the distinction clearly.[1] Both in feeling desire and in feeling pain we feel a stimulus to pass from the present state into a different one: but in the case of pain the impulse is to get out of the present state into some other which is only indefinitely and negatively represented as "not the present"; whereas in the case of desire, the primary impulse is towards the realisation of some definite future result. One difficulty in seeing this clearly is due to the fact that when desire is painful a secondary aversion to the state of desire is generated, which blends itself with the desire and may easily be confounded with it. But we may distinguish the two impulses by observing that they do not necessarily prompt to the same conduct; since aversion to the pain of unsatisfied desire, though it may act as an additional stimulus to work for the satisfaction of the desire, may also prompt us to get rid of the pain by suppressing the desire. And, on the other hand, when desire coexists with the pleasure that attends the

[1] I have discussed this point—partly in the same words—in my *Methods of Ethics*, bk. i. chap. iv. § 2.

realisation of what is desired—as it often does in a high degree —it seems to me peculiarly easy to distinguish it from pain. I should give as a good instance of this the experience of eating after an unusually long fast. I often find that in such a case appetite is very faint—hardly a perceptible feeling—before eating is begun: then, along with the pleasure derived from the satisfaction of hunger, the feeling of appetite becomes distinct and full; and is, as I have said, peculiarly easy to distinguish from pain.

III. At the same time, I quite admit that where desire is a specially prominent element of one's mental state, so that it imperiously claims attention, it is in most cases annoying or disturbing in some degree; it becomes a feeling of which we should prefer to get rid, whether by the realisation of what is desired or in some other way. And this leads me to my third explanation of the tendency to consider desire always painful; *viz.*, that the most marked and striking instances of the feeling, those that have made most impression, and that are therefore naturally recalled in memory when we think of cases of desire—these have usually been painful in some degree. Of a *very intense* desire I should admit it to be commonly true in my experience that, even when the state of which it is an element is on the whole pleasurable, the desire itself is painful in some degree. It is when the desire, being combined with other prominent elements of feeling, does not reach this absorbing and overwhelming intensity that I find it in my experience at best neutral.

It may be said, perhaps, that in these latter cases the desire itself is—viewed *as feeling*—so faint that it ceases to be within our power to determine its pleasurable or painful quality by direct introspection; while it is illegitimate to draw any inference as to the "feeling-tone" of this obscure element from the pleasurable quality of the whole state of which it is an element: it may be urged accordingly that such cases should be left out of account in the present discussion. Now I quite admit that not unfrequently during long processes of work for remote ends, the desire of the end, while remaining sufficiently strong to supply the requisite impulse to action, ceases to have a perceptible character as feeling; we only infer its presence from the actions that it stimulates, and from the satisfaction that follows on the attainment of some intermediate end which has no significance for us except as a step towards the ultimate end. But I think it is easy to give instances of pleasurable processes of activity accompanied by desires which—while not painfully intense—are strongly and distinctly felt; and at the same time are elements indispensable to the pleasurableness of the whole complex feeling that accompanies the activities stimulated by them.

Take, for instance, the case of a game involving bodily exercise and a contest of skill. I am not myself skilful in such exercises, and when I take part in them for sanitary or social purposes, I commonly begin without any desire to win the game. So long as

I remain thus indifferent, the exercise is rather tedious; usually, however, I find after a time that a feeling of desire to win the game is excited, as a consequence of actions directed to this end; and that, in proportion as the feeling grows strong, the whole process becomes more pleasurable. If this be admitted to be a normal experience, I shall be surprised if it is not also admitted that desire in this case is normally either a neutral or a pleasurable feeling; certainly I am unable to detect the slightest quality of pain in it.

And it would be easy to give an indefinite number of similar instances of energetic activity carried on for an end—whether in sport or in the serious business of life—where a keen desire for the attainment of the end in view is indispensable to a real enjoyment of the labour required to attain it, and where, at the same time, we cannot detect any painfulness in the desire, however much we try to separate it in introspective analysis from its concomitant elements. In such cases, it seems to me a peculiarly unwarrantable hypothesis to suggest that the desire itself is nevertheless an extraordinarily well-masked pain.

A familiar instance is the perusal of a novel—at least of a novel in which plot is important. It will not be denied that unless the writer can rouse the reader's curiosity—his desire to know the fate of the fictitious personages—the process of reading will usually be dull, while it becomes pleasurable in proportion as the desire grows keen. At the same time the strength and prominence of the desire in the consciousness of an ordinary reader is unmistakable; it is shown (*e.g.*) by the strength of the misleading impulse—which I think most persons who enjoy this kind of literature often have to suppress by an effort of self-control—to "look on" in order to satisfy curiosity.

IV. This last case, however, leads me to my fourth explanation of the difference of view between psychologists on this point. For I find that there is a considerable amount of variation in respect of the pleasurableness of intense curiosity in different persons. Several friends have told me that they do not care at all about the plot of a novel; that they would as soon read a novel backwards-way; that they enjoy a good novel more the second time of reading than the first. I infer from all this that either no keen desire to know how the fictitious story will turn out is aroused in such persons at all, or, if it is aroused in them, it is disagreeable rather than agreeable.

I think it possible that there may be a similar variation in the case of the bodily appetites. For instance, many persons treat hunger as a pain as a matter of course; *e.g.*, Mr. Marshall says that "hunger and thirst are typical cases of painfulness". Now, according to my own experience, in a state of good health the desire of food is, in its initial stages and if abstinence is not carried too far, usually not painful at all: I recognise it merely as a prompting of nature, a felt impulse to change my state, by taking food, which is strictly neutral as regards its "feeling-tone"—though

it may easily become, according to its conditions or concomitants, either disagreeable or, as I have before said, at least a prominent element of a state which as a whole is agreeable. At the same time, I can easily believe that in the experience of others it may chiefly present itself as painful; because I find that this is usually the case with myself, when I am out of health.

So far I have spoken of Desire rather than Aversion,—although in some of the instances that I have given the two feelings are in fact closely blended. I have been led to do this, because the painlessness of desire is easier to illustrate; since aversion is more often an element of a state on the whole painful, being normally connected, as we have had occasion to notice, with actual pains of all kinds; and where it is thus connected we can rarely carry introspective analysis so far as to distinguish the aversion as in itself a painless element of feeling. At the same time I think that, if Desire be once admitted to be not always painful, this will carry with it a similar admission as regards aversion: since in processes of energetic action for the avoidance of prospective evils, aversion appears to me to be often a prominent element of a state of feeling on the whole pleasurable, just as desire is in processes of action for the attainment of prospective good: and in such cases the painlessness of the aversion itself seems to me often as evident as the painlessness of desire. I need only refer briefly to the common experience of the pleasurable excitement of Danger; since this complex feeling certainly contains aversion as a prominent element.

Here, again, however, I should recognise a large amount of variation in the experiences of different persons. For instance, I myself am not ever pleasurably excited by physical danger, but always simply depressed: but I have had experience of pleasurable excitement in the case of danger to social position or reputation, where aversion has been a prominent element, not discernibly painful, of a state of feeling on the whole markedly pleasurable.

A contemplation of these differences among human beings suggests a reference to the rhetorical flourish that concludes Mr. Marshall's polemical note. He says that "to understand how desire and aversion can appear as neutral excitements to any man requires the postulation of a degree of 'philosophic calm' which has lost desire in that 'apathy' at which the Greeks aimed". This seems to me a singular view. I should have thought, on the contrary, that it is the man who regards desire and aversion as uniformly painful who is likely to aim at—and to attain; if it be attainable—the "apathy" or "philosophic calm" from which all desire is excluded. On the other hand, a man whose experience resembles mine is peculiarly unlikely either to seek or to find this apathy or unperturbedness; since he is likely to hold, with Hobbes, that "the Felicity of this life consisteth not in the repose of a mind satisfied"; and that even if we can conceive a man living whose desires are at an end, we cannot conceive him living well.

SUR LA DISTINCTION ENTRE LES LOIS OU AXIOMES ET LES NOTIONS.

Par George Mouret.

Dans une récente étude sur l'Induction et la Déduction, empreinte des idées de Mill et de Mr. Herbert Spencer (Mind, No. 64) Mr. L. E. Hobhouse a effleuré quelques points qui font l'objet d'un article de moi récemment publié dans la Revue Philosophique de France,[1] sur la nature des relations et des concepts, travail dont M. Hobhouse, d'ailleurs, ne parait pas avoir eu connaissance. Je suis peut-être ainsi justifié à intervenir, non pas directement au sujet des théories soutenues par Mr. Hobhouse, et que je partage, au moins sous la forme où elles ont été exposées par Mr. Spencer, mais à l'occasion de ces théories. M. Hobhouse distingue deux modes de raisonnement. Dans l'un, on conclut du particulier au général ; c'est l'Induction. Dans l'autre, on conclut d'une série de relations conjointes A – B, B – C, à une relation A – C ; c'est la *Construction*. (Je reproduis ici textuellement ce que nous dit Mr. Hobhouse : " In the first case, we generalise a single relation ; in the second, out of several relations, all general, we construct a whole in which the resultant appears as part ".) L'étude que j'ai publiée dans la Revue Philosophique a traité ces " Constructions " que j'ai appelées " Systèmes de relations," et c'est précisement l'axiome de Mr. Spencer, critiqué à tort, à mon avis, par Mr. Hobhouse, qui m'a mis sur la voie que j'ai suivie. Dans la présente note, je veux appeler l'attention sur une distinction fondamentale, relative à ces " Constructions," distinction qui ne ressort pas suffisamment de l'étude de M. Hobhouse, ce qui laisse planer un certain vague sur les conclusions de cet auteur, et notamment sur la signification qu'il attache à l'axiome de Mr. Spencer.

Lorsqu'on nous parle d'une relation A – C, dérivant des deux relations conjointes A – B et B – C, et qui fait partie intégrante du groupe des trois termes, de quelle relation s'agit-il ? Car le problème que se pose Mr. Hobhouse, à savoir : par quelle raison devons nous conclure des deux relations composantes à la relation résultante ? doit être résolu différemment suivant les cas.

Pour préciser la question que je pose, je choisirai un exemple simple, emprunté à la Mécanique. Supposons que les termes A, B, et C soient des forces, et que les forces A et C fassent respectivement équilibre à la force B, en sorte que les relations A – B, et B – C sont des relations d'équilibre. La mécanique nous enseigne que, dans ce cas, les forces A et C se font équilibre, et que, de plus, elles sont égales. Or il n'y a pas là une conclusion unique ; il y a deux conclusions distinctes, deux jugements différents, car l'égalité

[1] *L'Egalité Mathématique, 1re partie.* Rev. Philos. An. xvi., No. 8.

des forces et l'équilibre ne sont pas les mêmes notions ; c'est ce que j'ai montré tout au long dans mon travail sur l'égalité. Ainsi il est certain qu'il existe entre A et C, deux relations distinctes, l'une d'équilibre, et l'autre d'égalité.

Mais le point essentiel, et ce qui fait l'objet de mon intervention dans les questions soulevées par M. Hobhouse, c'est que ces deux relations, bien qu'elle dérivent du même groupe, de la même "Construction," n'ont ni la même origine ni le même fondement. En d'autres mots, il y a deux modes de dérivation différents, et pas conséquent la conclusion tiree d'une Construction s'appuie sur un principe ou sur un autre, suivant sa nature particulière.

Examinous quels sont ces deux principes. Dans l'exemple cité, le fondement de la relation d'équilibre ne repose pas évidemment sur la considération des relations conjointes d'équilibre. L'équilibre est connu, en tant que notion, dès que l'on a observé deux forces, c'est à dire deux corps conservant un état de repos, bien que chacun des corps ait une tendance à prendre une certaine accélération. En concluant done à l'équilibre entre A et C, on rapproche un fait déjà connu comme fait général, d'un cas particulier, qui est le cas de deux forces faisant respectivement équilibre à une troisième. Ce rapprochement, ou pour parler d'une manière plus précise, cette coexistence entre les trois relations d'équilibre est un fait, une loi, un principe, et la raison qui conduit à conclure à l'équilibre A – C, est celle qui constitue le fondement de toute Induction, de quelle que nature que soit ce fondement, qu'il résulte d'un fait d'association, ou d'une nécessité métaphysique.

La seconde relation conclue dans le cas considéré, celle d'égalité de force, a une origine moins direct que l'équilibre. Elle dérive, en effet, du système de deux relations conjointes d'équilibre ; nous disons souvent, il est vrai, que les forces A et C sont égales, *parce qu'elles* produisent le même effet sur la force B, mais ce "parce que" n'est pas une raison ; c'est une manière de rappeler la définition de l'égalité. Par exemple, le cercle est défini : "toute courbe dont tous les points sont également éloignés d'un même point appelé centre" ; mais quand nous disons d'une certaine figure : "c'est un cercle, *parce que* tous ses points sont également éloignés d'un même point," le "parce que" n'indique pas un fait nouveau, mais simplement le rappel d'une définition, de même que le syllogisme est le rappel d'un fait déjà connu.[1]

Dire qu'il y a égalité entre deux forces quelconques, ce n'est pas dire autre chose, que ces deux forces sont susceptibles de faire équilibre à une troisième. Par conséquent, conclure des équilibres A – B et B – C á l'égalité A – C, ce n'est pas exprimer un fait nouveau, ce n'est pas affirmer une coexistence entre des relations déjà connues et d'origines différentes, c'est répéter une définition,

[1] Ce rappel, comme l'a fort bien montré Mr. Spencer, n'implique qu'une seule chose : l'intuition d'une ressemblance ; aucun axiome n'est réellement invoqué dans l'énoncé d'un syllogisme.

ou, si cette association A – B – C se présente pour la première fois à l'esprit, c'est commencer à se former une notion nouvelle, qui n'est pas celle de l'équilibre, mais qui en est composée. L'égalité A – C n'est pas une chose distincte du système des deux relations conjointes d'équilibre A – B et B – C ; ce n'est pas un élément déjà connu autrement, et qui viendrait s'y ajouter. Pour les nominalistes, dont je suis, ce n'est même pas un élément nouveau, et l'égalité n'est qu'un mot commode pour désigner le système A – B – C et ses propriétés. Les conceptualistes ne s'en tiennent pas là, il est vrai ; ils supposent que sur ce groupe, vient se greffer un nouvel élément qui est l'idée abstraite d'égalité, mais cet élément se trouve en connexion intime avec le groupe ; il ne tire pas son origine d'ailleurs, et il résulte de la fusion de tous les groupes semblables, A – B – C.

Par conséquent, et quelle que soit la doctrine adoptée, en concluant à l'égalité des deux forces, on n' exprime pas un fait, une loi, mais on introduit dans son esprit une notion nouvelle, qui est celle d'un mode d'assemblage particulier de relations, ou bien encore l'on se remet en l'esprit cette notion, déjà connue à la suite de la perception de groupes semblables. Tous ceux qui ne considèrent pas les mots comme représentant des entités toutes faites dans l'esprit seront d'accord avec moi sur ce point.

Il y a, en résumé, dans les deux conclusions que l'on tire de la considération du groupe A – B – C, deux cas bien différents. L'un est celui qui correspond au jugement synthétique de Kant ; c'est l'affirmation de la coexistence de l'équilibre A – C avec les équilibres A – B et B – C. L'autre est un jugement analytique, c'est la perception de l'égalité entre A – C, c'est à dire la perception même du groupe A – B – C.[1]

Mr. Hobhouse cite un exemple géométrique emprunté à Mr. Bradley, celui de trois points A, B, C, situés de telle sorte que A soit à droite de B, et B à droite de C.

Ici, au premier abord, on ne peut dégager de cette assemblage qu'une seule conclusion, et cette conclusion est un axiome ; c'est le fait que le point A est aussi à droite du point C. Je montrerai, dans une prochaine étude sur la grandeur, qu'on peut en tirer aussi une conclusion analytique, qui est un élément du concept grandeur.

J'en viens maintenant à l'axiome de Mr. Spencer, que Mr. Hobhouse désigne sous le nom d'Axiome de Construction, à cet axiome

[1] Je simplifie ici la question ; dans mon étude sur l'égalité, j'ai montré que les "Constructions" d'où dérivent les concepts et les relations, sont soumises à certaines conditions (solidarité, coexistence, abstraction, et relativité) que ne remplissent pas nécessairement tous les assemblages de relations, et qui, quand elles sont remplies, le sont en vertu de certaines lois ou axiomes (principe d'indetermination, et principe d'incompatibilité). C'est pourquoi une notion nouvelle repose toujours sur certains faits, c'est pourquoi les définitions ne sont pas des opérations arbitraires ; il n'y a d'arbitraire, au point de vue logique, que le choix des mots.

que deux choses qui ont une relation déterminée avec une troisième chose ont une relation déterminée entr'elles.

Si l'on se place au point de vue psychologique, qui est celui de Mr. Spencer, il y a là certainement un axiome qui a de nombreux corollaires, entr' autres cet axiome fondamental que deux relations semblables (égales, dirait Mr. Spencer) à une troisième sont semblables l'une à l'autre.

Mais si l'on se place au point de vue ordinaire, qui est celui de la considération des phénomènes du monde extérieur, c'est à dire au point de vue des Sciences, et en particulier de la Logique, l'Axiome de Construction n'est plus un axiome, c'est une définition. Toute relation, tout concept,—d'une manière générale, toute notion—n'est pas autre chose qu'un assemblage de relations ou Construction, satisfaisant à certaines règles, et dont le groupe de deux relations conjointes, signalé par Mr. Spencer, n'est qu'un cas particulier. Ce qui fait le caractère des notions objectives telles que le temps, l'espace, la force, la masse, la longueur, la valeur, la vertu, c'est précisément cette complexité. Chaque notion est un édifice construit avec des matériaux qui sont eux-mêmes des édifices, quoique moins complexes. La nature des matériaux et la forme de l'édifice spécifient la notion. Quant á sa réalité, elle n'est pas autre chose que ce qui relie tous les matériaux et en fait un tout, c'est-à-dire la coexistence des éléments du système des relations. Ce n'est pas, comme disait Mill, la possibilité de certaines sensations, ce n'est pas comme disent les sensualistes, des groupes de sensations ; c'est la *possibilité* elle-même, abstraction faite de la nature particulières des sensations, ou si l'on préfère, des états de conscience.

En résumé, dans la considération d'une Construction, deux points de vue interviennent, suivant que le jugement porté repose sur une *loi*, ou qu'il constitue la perception d'une *notion*. En traitant donc des Constructions il est essentiel d'indiquer le point de vue auquel on se placer ; car dans le dernier cas, une seule Construction est en jeu, tandis que le second cas comporte la considération implicite de plusieurs Constructions, autrement dit, la coexistence de plusieurs choses.

Il est un dernier point sur lequel je voudrais encore faire une remarque ; il s'agit de la nature de la déduction. Il ne me semble pas que Mr. Hobhouse ait tout à fait mis en lumière ce qui en constitue l'essence. Sans doute la déduction implique la généralisation, mais c'est là un trait commun à tous les actes intellectuels ; intelligence et abstraction sont synonymes. L'essence de la déduction est tout autre : opposée à l'Induction, la Déduction est une restriction de la généralisation ; voilà son vrai caractère. Ce n'est pas, d'ailleurs, l'acte d' appliquer une vérité générale à un cas particulier, ce n'est pas simplement un syllogisme, autrement son rôle serait insignifiant, et l'étude qu'en ont faite les moines du moyen-âge serait amplement suffisante. La Déduction scientifique consiste dans l'application de plusieurs vérités générales

distinctes, à un cas complexe, et cette combinaison est accompagnée nécessairement d'un décroissement de généralité ; sinon il n'y a pas déduction. Quand je dis que la matière est inerte, étendue, et impénétrable, je ne fais pas une déduction, je réunis ensemble plusieurs vérités générales, pour les appliquer à un cas aussi général que ceux auxquels ces vérités s'appliquent séparément. Il n'y a déduction que quand les ensembles d'objets sur lesquels portent les vérités générales ne sont pas les mêmes pour chaque vérité ; la conclusion obtenue par déduction n'est alors applicable qu'à la partie commune à ces divers ensembles. Par exemple, cette propriété que les angles à la base d'un triangle sont égaux ne s'applique qu'aux triangles isoscèles, mais elles est déduite de vérités qui s'appliquent les unes à tous les triangles, isoscèles ou non, les autres à une figure plane quelconque, les autres à une figure quelconque dans l'espace ; d'autres enfin s'appliquent à tous les objets de connaissance, géométriques ou non.

Il est à peine besoin d'ajouter, que contrairement à l'opinion commune des mathématiciens, une conclusion obtenue par déduction n'est pas une vérité nouvelle ; elle n'est que l'expression, simplifiée, de vérités déjà connues. La seule chose nouvelle, c'est le mode d'association considéré, c'est à dire les données de la question.

En termes précis, dans la théorie que j'ai exposée sur la genèse des concepts et des relations, la déduction consiste selon sa forme la plus simple, dans l'application d'une induction à une partie seulement d'un système complexe donné de relations. Le syllogisme est l'application d'une induction à la totalité du système, et c'est pourquoi il n'est qu'une répétition logiquement et théoriquement inutile.

VII.—CRITICAL NOTICES.

Justice: Being Part IV. of the Principles of Ethics. By H. Spencer. Williams & Norgate, 1891. Pp. 292.

Mr. Spencer's book on "Justice" is stated in his *Preface* to be Part IV. of a comprehensive work on *The Principles of Ethics*, of which Part I. was published in 1879 as *The Data of Ethics*. "Led," he says, "by the belief that my remaining energies would probably not carry me through the whole, I concluded that it would be best to begin with the part of most importance. Hence, passing over Part II., 'The Inductions of Ethics,' and Part III., 'The Ethics of Individual Life,' I devoted myself to Part IV., 'The Ethics of Social Life: Justice'."

The contents of the new book may be summarily described by saying that the first seven chapters are ethical, the last seven mainly political, while the intervening fifteen are concerned with a subject common to ethics and politics—the determination on general grounds of the rights of individuals. In the present notice, it seems best to direct attention chiefly to the ethical aspect of the treatise.

Mr. Spencer begins by recalling briefly his general view of ethics, as given in *The Data of Ethics*. "The primary subject-matter of ethics is conduct considered objectively as producing good or bad results to self or others or both." The primary question, therefore, relates to the determination of the ultimate end and standard by which "goodness" and "badness" of results are to be estimated. In *The Data of Ethics* a double conception was presented of this ultimate end or standard. Regarded from a biological point of view the End was recognised as "Life estimated by multiplying its length into its breadth," *i.e.*, by taking into account, not simply duration, but also quantity of change. "The conduct called good rises to the conduct conceived as best," when it "simultaneously achieves the greatest totality of life, in self, in offspring, and in fellow-men." But regarded from the point of view of subjective psychology, a different ultimate end was presented, *viz.*, "desirable feeling called by whatever name—gratification, enjoyment, happiness". Accordingly, Mr. Spencer's system, as expounded in this earlier book, appeared open to the criticism that it assumed too easily a practically complete coincidence between Life and Pleasure; *i.e.*, it assumed that actions conducive to Maximum Life would always be no less conducive to Maximum Pleasure, and *vice versâ*. This fundamental assumption Mr. Spencer seems still to maintain; but, on the whole, we may say that, in the treatise now before us, the hedonistic aspect of his system drops somewhat

into the background. Thus in the first chapter, on "Animal Ethics," the ultimate end—not only of human conduct but of animal "conduct at large"—is stated to be "the greatest length, breadth, and completeness of life"; while "relatively to the species" acts are said to be good "which are conducive to the preservation of offspring or of the individual". Such acts may be "egoistic" or "altruistic": thus there are "two cardinal and opposed principles of animal ethics: for (1) "within the family group most must be given where least is deserved," while (2) "after maturity is reached benefit must vary directly as worth"—"worth" being measured by "fitness for the conditions of existence". The second of these principles or laws is limited by the first; since so far as adults act for the sustentation of their children, they do not receive from their own acts "benefit" in proportion to their worth: and it is further limited by the consideration that "if the constitution of the species and its conditions of existence are such that sacrifices, partial or complete, of some of its individuals so subserve the welfare of the species that its numbers are better maintained than they would otherwise be, then there results a justification for such sacrifices".

This third point, however, is not, in Mr. Spencer's view, an essential one: he recognises only "*two* essential but opposed principles of action by pursuance of which each species is preserved," and in considering successively (in chaps. ii. and iii.) "sub-human" and "human" Justice, he concerns himself only with one of these principles, "passing over the law of the family as composed of adults and young". It would seem that this limitation of view is not unlikely to lead to error, when an attempt is subsequently made to analyse and trace the growth of the "sentiment" and "idea" of Justice among men, and to determine its fundamental formula: since the common-sense of mankind certainly recognises family relations as a part of the sphere of Justice. And in fact when Mr. Spencer comes in later chapters (xx. and xxi.) to treat of the mutual rights or claims of husbands and wives, and of parents and children, the inadequacy of the principle of Justice formulated in his earlier chapters becomes manifest.

For the present, however, let us "consider the law of the species as composed of adults only". Considering this first in the case of "sub-human life," Mr. Spencer lays down as the "law of sub-human justice" that "each individual shall receive the benefits and the evils of its own nature and its consequent conduct". In a certain sense, this law is said to "hold without qualification in sub-human life": in another sense, it is explained that "sub-human justice is extremely imperfect, both in general and in detail". In general, it is imperfect "in the sense that there exist multitudinous species the sustentation of which depends on the wholesale destruction of other species": which, according to Mr. Spencer, implies that "the species serving as prey have

the relations between conduct and consequences habitually broken"

But surely the existence of a predatory species is a part of the conditions of existence of the species preyed upon; and if the former eats up the latter, it would seem that the latter's unfitness to the conditions of its existence would be demonstrated, and Spencerian Justice perfectly realised in its annihilation. It may be said, as Mr. Spencer goes on to say, that "enemies are causes of death which so operate that superior as well as inferior are sacrificed": and that other "accidents"—"inclemency of weather," "scarcity of food," "invasions by parasites"—fall "indiscriminately upon superior and inferior individuals". Here, however, the term "superior" seems ambiguous: it may mean (1) more highly organised, or (2) more qualified to preserve itself and its species under hypothetical conditions—*e.g.*, with extremes of frost and heat, exceptional famines, foes and parasites left out—or (3) more qualified to live under actual conditions, though not sufficiently vigorous to resist the destructive forces. The two former meanings seem hardly relevant, when we are basing ethical principles on biological laws; for the adaptation of the species in accordance with biological laws must be adaptation to an actual, not an ideal, environment. And if the third meaning be taken, I do not see that "sub-human justice" can be said to be imperfect, according to Mr. Spencer's statement of its law, because it is not finely graduated. Suppose that, in a given region, two-thirds of a certain species of animal are killed by extreme cold: each individual is none the less "subject to the effects of his own nature" because some are hardier than others. The point is that no one is hardy enough.

Proceeding, we learn that the individualistic "law of sub-human justice" is further qualified by the conditions of gregariousness. Firstly, each member of a group of gregarious animals receives the benefits and evils not only of "his own nature and its consequent conduct" but of the nature and consequent conduct of some or all of the other members of the group: even "an occasional mortality of individuals in defence of the species" may further the preservation of the species "in a greater degree than would pursuit of exclusive benefit by each individual". This last "limitation of sub-human justice," however, is, in Mr. Spencer's view, solely due to the coexistence of living enemies of the species in question. Secondly, a condition "absolute for gregarious animals" is that "each member of the group, while carrying on self-sustentation and sustentation of offspring, shall not seriously impede the like pursuits of others". This condition, in the case of some gregarious creatures, even becomes a law enforced by sanctions,—as Mr. Spencer affirms on the authority of observers of beavers, bees, crows and rooks.

In the illustrations that he gives of this enforcement, however, Mr. Spencer seems to me to put together cases that should be carefully distinguished. In some cases *abnormal* action on the

part of a member of a gregarious group, tending to interfere with the sustentation of other members, is punished by those other members—as when "among rooks, a pair which steals the sticks from neighbouring nests has its own nest pulled to pieces by the rest". But the case of a class in the gregarious community only organised for the performance of a certain function, and destroyed when this function is performed that it may not be a burden on the community—as when the drones of a hive are massacred by worker-bees—is surely quite different. I dwell on this because "sub-human justice" is introduced to lead up to "human justice"; and, while the former kind of repression of acts inconvenient to the community is certainly analogous to the mainly individualistic legislation of actual civilised societies, the latter suggests a drastic treatment of those who neither "toil nor spin" such as the most bloodthirsty socialist has never yet recommended. Moreover, when Mr. Spencer says that "conditions such that by the occasional sacrifices of some members of a species, the species as a whole prospers" are "relative to the existence of enemies," he seems to ignore this normal destruction of drones by workers.

I pass now to "Human Justice"; which Mr. Spencer regards as a "further development of sub-human justice," the two being "essentially of the same nature" and forming "parts of a continuous whole". Of man, as of all inferior creatures, we are told that "the law by conformity to which the species is preserved is that among adults the individuals best adapted to the conditions of their existence shall prosper most, and that individuals least adapted to the conditions of their existence shall prosper least.... Ethically considered, this law implies that each individual ought to receive the benefits and evils of his own nature and subsequent conduct." But, in the case of man, the operation of this law is admitted to be modified by the condition of gregariousness in a manner only "faintly indicated among lower beings". For "as communities become developed" the "limits to each man's activities necessitated by the simultaneous activities of others" become more and more "recognised practically if not theoretically": also in the case of this "highest gregarious creature" the principle of individualistic justice has to be qualified, to a greater extent than in the case of lower gregarious creatures, by admitting the sacrifice of individuals for the benefit of the community. This highest creature is distinguished by the characteristic of fighting his own kind; and "the sacrifices entailed by wars between groups" of human beings have been "far greater than the sacrifices made in defence of groups against inferior animals". But "the self-subordination thus justified, and in a sense rendered obligatory, is limited to that which is required for defensive war". It may indeed be contended that "offensive wars, furthering the peopling of the earth by the stronger, subserve the interest of the race". But, in Mr. Spencer's view, "it is only

during the earlier stages of human progress that the development of strength, courage, and cunning are of chief importance; . . . the arrival at a stage in which ethical considerations come to be entertained is the arrival at a stage at which offensive war ceases to be justifiable". And he holds that even defensive war, and the qualifications of the abstract principle of justice which it involves, belong to a transitional condition, and "must disappear when there is reached a peaceful state". Such qualifications therefore belong to "relative" not "absolute ethics". In absolute ethics, the law that "each individual ought to receive the benefits and evils of his own nature" is true without qualification; and Mr. Spencer affirms that it is "obviously that which commends itself to the common apprehension as just".

It seems to me that the effects of gregariousness, in the highly developed form in which it appears in the human race, are too lightly treated in this argument. It is too hastily assumed that the necessity for subordinating the welfare of the individual to that of the species arises solely from war: and in the consideration of war and its consequences Sociology and Ethics are too much mixed. Granting that it would be for the advantage of the human race that war should disappear, it does not follow that it will disappear; it might similarly be better for sub-human life that beasts of prey and parasites should disappear, but Mr. Spencer's faith in sub-human evolution does not lead him to assume that this will be its ultimate result. Granting, again, that industrialism will put an end to militancy, it is not shown that conflicts of interest among industrial groups—such as we see at present in apparently growing intensity—will not continue, and that the exigencies of such conflicts will not impose on individuals a severe subordination to the interests of their respective groups. Granting, finally, that such industrial conflicts are ultimately to cease, it seems rash to assume that when this consummation is reached, Mr. Spencer's individualistic principles of justice will be found reigning unchecked: for it may be that this result will be brought about by an implication of interests and a development of sympathy which will render all men "members one of another" to a degree beyond our present experience: so that when any one suffers the rest will inevitably suffer with him and the rule that "each is to bear the evils of his own nature" will become impracticable or unmeaning. I do not prophesy that these things will be: but if Mr. Spencer is allowed to "fancy warless men" and lay down *a priori* rules of conduct for a world lapped in universal peace, I do not see why Mr. Bellamy, or any one else, may not with equal legitimacy fancy more unselfish men, and construct a still more Absolute Ethics for a non-competitive Utopia.

And I cannot admit that Mr. Spencer's principle is "obviously that which commends itself to the common apprehension as just". Doubtless the popular phrases that a man "has no one to blame

but himself," that "he has made his own bed and must now lie in it," or that another has "fairly earned his reward," indicate the consciousness that justice demands a proportion between effort and advantage. But we commonly recognise that equal efforts do not produce equal results: and it is not "obvious" to the common-sense of civilised men that Justice requires a man to suffer for failures not due to wilful wrong-doing or neglect. I agree with Mr. Spencer that it would be practically disastrous to adopt the communistic principle that "each shall make the same effort, and that if by the same effort, bodily or mental, one produces twice as much as another he is not to be advantaged by the difference". Still I think that this principle is in accordance with the prevalent view of ideal justice, so far as the comparatively inefficient individual is not to blame for his comparative inefficiency;—though, as the impracticability of realising the principle under the actual conditions of human life is generally recognised, it presents itself as a principle of Divine rather than of human justice.

Making these reserves, I recognise much truth in Mr. Spencer's account (in chaps. iv. and v.) of the origin and growth of the "sentiment" of Justice, and also in his characterisation of the "idea" of Justice, which the individualistic development of modern civilised society has tended to render prevalent. He begins with what he rather strangely calls the "egoistic sentiment of justice"—the individual's resentment of interference with the pursuit of his private ends—and proceeds to explain how the "altruistic sentiment of justice" comes into existence by the aid of a "pro-altruistic sentiment having several components". He explains how the egoistic resentment of interference combines with fear of similar resentment and retaliation on the part of others if they are interfered with, and also with the dread of social reprobation, the dread of legal punishment and the dread of Divine vengeance for such interference: and how, society being held together by the "pro-altruistic" sentiment thus compounded, the development of sympathy through gregariousness gradually produces the genuine "altruistic" sentiment of justice. In this way the "conception of a limit to each kind of activity up to which there is freedom to act" gradually "emerges and becomes definite" in human thought. The idea of Justice that thus emerges contains two elements. "Inequality is the primordial ideal suggested. For if the principle is that each shall receive the benefits and evils due to his own nature and consequent conduct, then since men differ in their powers, . . . unequal amounts of benefit are implied." On the other hand, the recognition of the need of "mutual limitations of men's actions" involves the conception of Equality; since "experience shows that these bounds are on the average the same for all". But the appreciation of these two factors in human justice has long

remained unbalanced. Thus "in the Greek conception of justice—which admitted slavery as just—there predominates the idea of inequality," and "the inequality refers not to the natural achievement of greater rewards by greater merits but to the artificial apportionment of greater rewards to greater merits". On the other hand, in the dictum of Bentham that "everybody is to count for one, nobody for more than one" the idea of inequality entirely disappears. It has, in short, been left for Mr. Spencer to give the true conception of Justice by "co-ordinating the antagonistic wrong views," and showing that the ideas of equality and inequality "may be and must be simultaneously asserted," being "applied the one to the bounds and the other to the benefits". The formula of justice, so conceived, may be precisely expressed as follows: "Every man is free to do that which he wills provided he infringe not the equal freedom of another man".

In an Appendix (A) Mr. Spencer recognises that Kant's "Universal Principle of Right"—with which he was till recently unacquainted—is closely allied to his own: but he points out that Kant "enunciates an *a priori* requirement, contemplated as irrespective of beneficial ends," whereas Mr. Spencer's "law of equal freedom" is to be regarded as "the primary condition which must be fulfilled before the greatest happiness can be achieved by similar beings living in proximity". But when the "greatest sum of happiness" is thus expressly stated to be the "remote end" to which Mr. Spencer's formula simply prescribes the indispensable means, I think it becomes clear that his criticism of Bentham's dictum above quoted involves a misunderstanding. For, as Mill says, "the greatest happiness principle is a mere form of words without rational significance, unless one person's happiness, supposed equal in degree,[1] is counted for as much as another's". The dictum, in short, is merely designed to make the conception of the end precise, not to determine anything as to the legal rules by which the end may be best attained.

How then is it known that Equal Freedom thus understood is unconditionally the best means to the attainment of the greatest sum of human happiness? Several lines of argument in Mr. Spencer's view combine to give this principle the highest imaginable "warrant". First there are the biological considerations, yielded by a survey of life or conduct at large, which we have before examined. Secondly, Mr. Spencer tries to show, in the history of human institutions and ideas, a gradual growth of this conception into distinctness. I think he has some right to claim as an example of this the doctrine of natural law, as held by a succession of jurists from Roman times to the eighteenth

[1] Mill here adds "with the proper allowance made for kind". The addition seems to me either superfluous or erroneous: but the question whether it is so or not is not relevant to the present issue.

century; along this line of thought we may fairly trace a development towards the modern individualistic ideal. Other parts of Mr. Spencer's historic argument have less force; *e.g.*, a reference to the "Christian maxim—Do unto others as ye would that others should do unto you"—is hardly relevant to a definition of strict Justice. It is not, however, on a biological or a historical basis alone that Mr. Spencer rests the Formula of Justice. The Law of Equal Freedom is, in his view, "an immediate dictum of the human consciousness after it has been subjected to the discipline of prolonged social life". It is an ethical intuition, comparable in self-evidence with the axioms of geometry, though "relatively vague" and needing, far more than the mathematical intuitions, to be subjected to "methodic criticism". It does not, indeed, seem to be a dictum of every developed human consciousness: since, as Mr. Spencer tells us with much emphasis, the "reigning school of politics and morals" treat it with scorn, and "daily legislation" serenely overrides it. Nevertheless, Mr. Spencer maintains (in chap. viii.) that all "rights truly so-called are corollaries deducible from it"; and these corollaries will be found "one and all" to correspond with legal enactments of modern States.

Then, in ten successive chapters, he works out this correspondence in detail, by deducing from the Law of Equal Freedom "the right to physical integrity," the "rights to free motion and locomotion," the "rights to the uses of Natural media," the rights of property, corporeal and incorporeal, the rights of gift and bequest, of free exchange, free contract, free industry, free belief and worship, free speech and publication. In each case Mr. Spencer appends a brief account of the historic process by which, as civilisation has progressed, these rights have come to be recognised with increasing clearness and fulness. No one is more skilful than Mr. Spencer in exhibiting the cumulative force of a comprehensive and complex argument: and many parts of these chapters are both interesting, though dealing with trite topics, and effective for Mr. Spencer's purpose. I think, however, that in several cases the deductions from Mr. Spencer's principle are not performed with sufficient exactness; and that, if they were made more exact, the discrepancy between the results obtained by deduction and the established laws of modern States would be more marked. This would not, indeed, necessarily invalidate Mr. Spencer's conclusions; since, firstly, actual law may be wrong, and secondly, it may be right but not ideal, a compromise inevitable at the present stage of social development: for Mr. Spencer's idea of Justice, as he is careful to state, is "appropriate to an ultimate state, and can be but partly entertained during transitional states". But it would be an advantage to have the three things—the ideal rights of an ideal society, the legal rights as they ought to be here and now, and the actual legal rights—more clearly and fully

compared. As it is, I fear that the reader will not always thoroughly distinguish the three questions: (1) 'How far can we know the relations of members of an ideal society?' (2) 'How far ought we to imitate these relations here and now?' (3) 'What changes in our actual law would this imitation involve?'

One cause of inexactness in Mr. Spencer's deductions lies in the unpreciseness of his fundamental formula. The simplest statement of the "Law of Equal Freedom" is that "the liberty of each" should be "limited only by the like liberties of all". This, however, as Mr. Spencer sees, might be interpreted as allowing A to knock B down if he were willing to take his chance of being knocked down by B. To exclude this, Mr. Spencer defines the formula as meaning "that each in carrying on the actions which constitute his life for the time being and conduce to the subsequent maintenance of his life, shall not be impeded further than by the carrying on of those kindred actions which maintain the lives of others". But he does not seem always to keep to this definition, vague as it is: for instance, in discussing the "Rights to the uses of Natural Media" he lays down that "vitiation of air" which is "mutual" "cannot constitute aggression": though it would seem that such vitiation might easily impede the maintenance of the lives of the mutual vitiators. Sometimes, again, a wider and more purely utilitarian meaning is given to the formula. Thus we are told that "considered as the statement of a condition by conforming to which the greatest sum of happiness is to be obtained, the law forbids any act which inflicts physical pain". But if it is so "considered" why does it take account of *physical*[1] pain only, and why does it forbid any act inflicting such pain, and not merely acts that cause a balance of pain on the whole? Mr. Spencer would perhaps reply that, in an ideal society, all right acts cause "pleasure unalloyed by pain anywhere":[2] but then such a society is so unlike that in which our ancestors have lived that their experiences can hardly have generated any trustworthy intuitions with regard to it.

The vagueness of Mr. Spencer's fundamental formula is strikingly illustrated by the manner in which he applies it (chap. xi.) to the burning question of Right to the Use of Land. For here the "law of equal freedom" is allowed to drop the idea of "freedom": it is converted into the proposition that "men have equal claims to the use of land". Equality, not Liberty, is here the point; for, obviously, the admission of "equality of claims" does not in any way determine how much freedom is to be allowed to any one in using land: indeed, as Mr. Spencer goes on to argue, the principle is realised by "the people's supreme ownership of the land" as asserted in the right of "appropria-

[1] Of course, in a sense all pain is "physical," but I presume Mr. Spencer is using the term in a narrower sense.

[2] *Data of Ethics*, p. 101.

tion of land for public purposes" claimed and exercised by modern Governments. But if the "law of equal freedom" as applied to the use of land is satisfied by "the people's ownership" of the commodity, it would seem to admit a completely communistic system, in which all management and cultivation of land would be strictly public, and private use would only begin after the product was divided. And in fact Mr. Spencer's deduction of the Right of Property (chap. xii.), as established in modern civilised societies, is singularly the reverse of cogent. After describing the manner in which private ownership grows up, he says that, "though we cannot say that ownership of property, thus arising, results from actual contract between each member of the community and the community as a whole, yet there is something like a potential contract; and such potential contract might grow into an actual contract if one part of the community devoted itself to other occupations, while the rest continued to farm; a share of the produce being in such case payable by agreement to those who had ceased to be farmers, for the use of their shares of the land". But he adds that "we have no evidence that such a relation between occupiers and the community has ever arisen"; and merely suggests that hereafter "there may again arise a theoretically equitable right of property". I am therefore unable to see why in subsequent discussions he allows himself to treat existing rights of property as though they had been adequately justified by his formula.

In an Appendix (B) Mr. Spencer suggests that in England the sums paid in poor-relief since 1601 may be reasonably held to satisfy the just demands of the landless, as they have not an equitable claim to more than "the original prairie value of the land". But, granting that the Law of Equal Freedom can be properly fulfilled by this method of what has been called "ransom," it may surely be contended that, on his own principles, the claim of the landless extends at least to *all* the present value of the land after subtracting what would now have to be paid to bring it from its original condition to its present degree of utility, —*i.e.*, not the prairie value alone, but the prairie value *plus* the "unearned increment"; and it may be contended further that the existing landless ones cannot reasonably be held to have been compensated by poor-rates paid to their ancestors.

It would, however, be out of place to argue here the economico-political issue thus raised. I notice it here chiefly in order to point out how clearly the whole discussion shows the inadequacy of the single formula of justice offered by Mr. Spencer. When we are inquiring what compensation is justly due to persons whose rights have admittedly been encroached upon, supposing the encroachments have been sanctioned by law and custom and complicated by subsequent exchange, it is evident that the Law of Equal Freedom cannot help us; we want some quite different principle of Distributive or Reparative Justice.

A similar conclusion is suggested by the discussion, in chapters xx. and xxi., of the Rights of Women and Children. Firstly, in considering the position of married women, Mr. Spencer seems to assume, without justifying the assumption, that it is not to be settled simply by free contract between men and women. But surely the question of the Marriage-Law ought to be more frankly faced by a thorough-going individualist pursuing a high *priori* road. If he intends to allow perfect freedom of contract in determining conjugal relations, he ought to admit openly his breach with the law and morality of all civilised societies; if not, he ought to make quite clear how he justifies restrictions on freedom of contract. Again, assuming that the State has to determine a division of power and responsibility between husbands and wives, surely it is manifest that this must be done on some principle of justice quite different from Mr. Spencer's formula. We are told, for instance, that "justice appears to dictate" that "the power of the mother may fitly predominate during the earlier part of a child's life, and that of the father during the latter part". But what kind of Justice? Certainly not the Law of Equal Freedom. Similarly when we are told that "since, speaking generally, man is more judicially-minded than woman, the balance of authority should incline to the side of the husband," the proposition—however sound—seems to have no connexion with Mr. Spencer's Formula: though we may perhaps trace in it a connexion with the Greek conception of Justice, as "inequality established by authority," which has been repudiated in a previous chapter.

After civil rights, the reader may perhaps expect to pass, in chapter xxii., to a discussion of constitutional rights, on the basis of Absolute Justice. He finds, however, that in Mr. Spencer's view "there are no further rights, truly so called," than the civil rights already set forth: "so-called political rights" being "but an instrumentality for the obtainment and maintenance" of these civil rights. The conception (*e.g.*) of the "power of giving a vote" as "itself a right" involves a "confusion of means with ends". Hence, in the discussion that follows on the structure of Government, the *a priori* method is almost entirely abandoned. Mr. Spencer, indeed, implies obscurely that there is a "constitution of the State justified by absolute Ethics"; but he makes no attempt to determine it otherwise than by the vague suggestion that it "must be a constitution in which there is not a representation of individuals but a representation of interests". The only topic under the head of the constitution of the State, on which Justice again becomes the governing conception, is the "distribution of State-burdens"; but here again we feel strongly the need and the absence of some principle other than Mr. Spencer's formula. For instance, it may be true that "as life and personal safety are, speaking generally, held equally valuable by all men," such public expenditure as is entailed by use of these shall "fall equally on all": but the conclusion is hardly deducible from the Law of Equal Freedom.

The *duties* of the State, on the other hand, can be simply determined by the fundamental formula, applied positively and negatively: it must "prevent interferences with individual action beyond such as the social state itself necessitates". Justice requires it to do this adequately: and Justice requires it to do nothing further,—at anyrate if the further action is either coercive or expensive; since either coercion or expenditure, beyond what is needed for the protection of individual rights, is itself an infringement of these rights. It would hardly be suitable in the present notice to discuss adequately Mr. Spencer's application of this simple principle, which will be, in the main, familiar to readers of his previous writings. I will only say, briefly, that the consequences of the political empiricism that disregards this principle are severely expounded, and impressively illustrated by modern instances, in the concluding chapters.

H. Sidgwick.

Les Idéologues. Essai sur l'histoire des Idées et des Théories scientifiques, philosophiques, religieuses, etc., en France depuis 1789. Par F. Picavet, Docteur dés lettres, Agrégé de philosophie, Maître de conférences à l'École des hautes études, Lauréat de l'Institut. Paris: F. Alcan, 1891. Pp. xii., 628.

The author of this important volume essays a task of no common magnitude. Rarely has there been a greater, or at least a more varied, intellectual outburst than marked the revolutionary era of French history. M. Picavet traces its origin, follows it along the multifarious lines that it took, and seeks to appreciate the abiding value of its results. The industry he displays is immense, and hardly less remarkable the historical and critical insight. Writing also clearly and with force, there is not an aspect of the movement that he does not effectively portray, not one of its hundred figures, small or great, that he does not manage to invest with interest. But it must be added that the very thoroughness of his work over so wide a field has at times a somewhat overpowering effect. And when it comes to looking back upon the whole moving scene, one sighs for index as a means of keeping hold of it all. Why, with all its fine gift of exposition, is the French mind hardly more careful than the German to employ that simple help for making its labours of ready service to the busy student?

The revolutionary movement of thought in France, called Ideological by Destutt de Tracy, one of its chief leaders, has a special interest for us in this country, as M. Picavet is forward to point out. If English thinking has in this generation recovered in France something of the same kind of authority that was yielded before the middle of last century to the thought of Locke, it has

done so in forms that were moulded not least by influences received from France itself. In fact, during the modern period an alternate process of give-and-take between the two countries has always been going on. Locke, who seemed to overcome Descartes in France, had owed more to Descartes than to any other of his predecessors. So the later English psychology, which has supplied so manifest a stimulus to the French activity of mental research at the present day, had its own line of progress, at an earlier time, very markedly affected by the Ideologists. Hamilton was quite right when he signalised the origin, in D. de Tracy, of Thomas Brown's theory of external object, taken up afterwards and developed by J. S. Mill, Prof. Bain and others. The discovery does not seem to have been made by Hamilton till his later days (*Reid*, Note D, p. 868 n.), but already in his early onslaught upon Brown (Art. " Philosophy of Perception," 1830) there is some general reference to the school which he gives Cousin, after Royer-Collard, the credit of overcoming. Such overthrow, in as far as it took place, is but another effect of the interchange of thought between the two countries, since Royer-Collard (from 1811) was stirred to his revolt against the Sensationalist tradition in France by no other than the influence of Thomas Reid. As for the Hamilton of 1830, it is not out of place to add that one cannot easily now read without smiling the tones of portentous solemnity in which he speaks of those high interests of morality and religion which, under Locke's influence, had been wrecked for nearly a century in France till the great Cousin at last stood forth to stay and save. It is not creditable to Hamilton's discernment that he should at any time have let himself be imposed upon by that flighty rhetorician. Had he known, too, a little more intimately the work of those, whether called Sensationalists or Ideologists, whom at that time, apparently, he was content to take at the estimate of their foes, he might have recognised that in Degérando and Laromiguière, then still active, there was as much concern for religion (not to say morality) as the belauded Cousin ever showed; that Cabanis himself, more than twenty years before, had supplemented his scientific inquiries into the relations of mind and body by a grave philosophical argument (*Lettre sur les Causes premières*) for religious interpretation of the universe; and that in the earlier generation Condillac, for all his psychological insistence upon sense, was a most ardent spiritualist and theist.

But wherein lies the distinctive character of the Ideological movement, as we may now understand it with the help of M. Picavet's practically exhaustive research? Less in its method, which had been applied by others before to the investigation of mind, than in its aims begotten of a time of high humanitarian enthusiasm. It was essentially a revolutionary movement: Education, government, the whole frame of society were to be recast; the renovation being based upon a scientific analysis of " ideas,"

or developed human experience, driven, with that all-inclusive practical purpose, deeper than ever before. The enterprise indeed, even its practical bearings, was not novel. Locke's "way of ideas," which remained the whole method of the French revolutionary thinkers, had for him also a practical, quite as much as a theoretical, significance. And one object, uniting considerations of both theory and practice, namely, the direction and furtherance of the work of special science, had been as present to the mind of Hume as of Locke in their new analytic treatment of human "understanding". But the progress of the positive sciences had come, by the end of the eighteenth century, to exert an ever-deepening influence upon philosophic minds. The French thinkers who, after Condillac, continued to draw their main inspiration from Locke had it forced upon them to make mental inquiry more and more expressly scientific in form, on the model of the other sciences; while yet contending that these others could be systematised and co-ordinated only from the point of view of the mental inquirer. Getting then, after the revolutionary Terror, the opportunity of building upon a ground that had been swept bare, they made it their first practical concern to refound the whole higher instruction of France, and to organise, in the Institute, the means of universal scientific advance. In both departments—of research as of instruction—"Analysis of Sensations and Ideas" (or other equivalent designation) was put forward to mark the particular line of scientific inquiry and consideration that should henceforth take the place of an arbitrary "Metaphysic" in relation to all other actual or possible varieties of human knowledge and endeavour. So may we represent to ourselves, in general, the nature and scope of the movement.

Leaving aside for the moment M. Picavet's introductory question of the "Origins," we may first note the chapter (pp. 20-100) in which he gives account of the Ideologists' "Relations, political and private, academic, scientific, and literary". It is truly a marvel of painstaking research. The work remained for M. Picavet to do, and he has done it once and for all. Nothing that one can desire to know of the new institutions, educational and other, set on foot from 1796, or of the men, obscure as well as prominent, who helped in their founding and working, is here left unelucidated. The class of Moral and Political Sciences, second of three composing the Institute, had but seven years of life before Napoleon, who as General Bonaparte could speak about "ideas" with the foremost (p. 80), abolished it in his pique at being unable to retain the good opinion and support of the philosophical leaders who, in their desire for a more settled political order, had helped him to his supremacy in the State. From that time it was that "Ideologist" became his favourite term of contempt for all those whose serious scientific and social purpose would not bend itself to the service of his personal ambition, and in a depreciatory sense passed readily enough into

currency with many who had been proud to bear the name. But Napoleon's impatience of mental independence did not deprive the school of its means of official utterance before its work has been in effect done. And it needs but an unbiassed study of its chief productions to see that at least the leading spirits, Cabanis and De Tracy, if over-sanguine in their enthusiasms, had no such deficiency of practical sense as the title of their choice was made to imply against them.

The work of the Ideologists is, in effect, summed up in the writings of the two men, Cabanis and De Tracy, and all the more because of their complementary relation to one another; De Tracy confining himself, for the most part, to properly subjective consideration, while Cabanis made it his business to discover the physiological conditions of mental process. But with M. Picavet the work of the two (done within some ten years from 1796) and of those whom they more especially influenced constitutes but one of three stages that may be distinguished within the whole movement. To a later "generation" are referred, with others of less note, Degérando (1772-1842) and Laromiguière (1757-1836), who, though already active by the side of De Tracy and Cabanis in the revolutionary years, did not attain their prominence till a later time, when it was left to them to continue the Ideological tradition in face of the strong reaction that had set in against it, but to continue it in a modified form, at once "spiritualist and Christian". And a "first generation" is made of writers, like Condorcet and Volney, whose work, in conception if not also in execution, reaches back to the pre-revolutionary period and is to be ranked with that of the Ideologists proper because of a general similarity in method and aim.

M. Picavet gives a very interesting chapter (pp. 101-75) to these immediate forerunners, who were all in more or less close relations with Cabanis and De Tracy; but, for the right understanding of the central pair, it is of greater moment to note what he otherwise seeks to establish concerning the origin of their thought. The most obvious question is of their relation to Condillac, the dominant French thinker of the eighteenth century, and this is a question which M. Picavet keeps in view all through his exposition and would very decidedly answer. He speaks with an exceptional knowledge of Condillac, having some years ago edited with characteristic care a part of the *Traité des Sensations*. He has, moreover, for the present inquiry, made an elaborate survey of all prior influences, French or other, that can have affected the Ideologists; though in his book, as printed, some two hundred pages which he had written on this topic have had to be condensed into an introduction of less than twenty. In the result, according to him, it is a grave historical mistake to subordinate the Ideologists to Condillac as master. Though agreeing with Condillac in the general psychological method he had taken from Locke, they criticised him with the utmost

freedom and made claim to have advanced indefinitely beyond his positions. Neither was Condillac himself, from the middle of the century till his death in 1780, by any means the solitary thinker of mark and power in France that he is commonly represented. And when we go back beyond Locke, to whom the allegiance of the Ideologists is undoubted, it is to Hobbes and Bacon, outside of France, that they are seen to stand most near; while, in France, it was at least as much from Descartes as from Gassendi or from the line of sceptics reaching back through Bayle and others to Charron and Montaigne that they drew. In all this contention by M. Picavet there is much freshness of historical insight, and especially noteworthy is the evidence he adduces that never in the eighteenth century did Descartes cease to be an active philosophical force among his countrymen. With the Ideologists, at anyrate, he stood in high credit—in higher credit (it is interesting to note) than with Royer-Collard, the initiator in the second decade of the nineteenth century of that spiritualist reaction which later on was fain to connect itself with his celebrated name. As to the Ideologists' independence of Condillac, however, M. Picavet's proof is not very decisive. It is just as easy to find in the pages of De Tracy and Cabanis professions of discipleship as reclamations against this or that shortcoming of their psychological predecessor. They were in truth very specially beholden to him; but, over and above their novel breadth of practical aim, they had the characteristic—in a remarkable degree for their time—of seeking to connect their thought with the best (as they conceived it) of method or principle that they could find among all the streams of modern inquiry. They looked upon themselves as the crest of the whole advancing modern wave. This confidence is curiously manifested in a criticism on Kant which De Tracy read to the Institute in 1802. Some of it (as given by M. Picavet, pp. 347 ff.) is not at all ill-pointed as special criticism, but more significant is the general judgment passed, as from a higher level, on "les philosophes allemands"—who retain the prejudices of the old school-doctrine, do not know of the observations that have been made in France, take no account of origins, language, method of calculus, but regard the human mind as an abstract thing, &c., &c.

Cabanis and De Tracy occupy between them more than a third of M. Picavet's book (pp. 176-398). His plan is to interweave with accounts of their lives abstracts, more or less critical, of their writings, in order (as far as possible) of composition. The work is done with so much intelligence and sympathetic care that for most readers the abstracts may well supersede the originals, though some can hardly fail to be led on by them to a direct contact with the writers. Cabanis (1757-1808), the slightly younger man, was, as long as he lived, perhaps the more prominent or representative figure of the two, and he lived long enough to cover not only the period of his yoke-fellow's effective authorship

but also the whole time of their school's undisputed influence. He had all the warmth of nature and easy flow of utterance helpful in the impressing and attaching of other men. Though philosophic purpose was never absent, literary production took with him a somewhat wide and varied range. Of scholarly habit from youth, before taking up the medical profession, he wrote early and late both as scholar and as physician ; and in his master-work, the *Rapports du physique et du moral de l'homme*, which embodies much of his own medical experience, the literary touch is present in a high degree. It brought together a series of memoirs read to the Institute from 1796, some others being added when the book was made up in 1802. By that time Cabanis, who had been very active in support of Bonaparte's *coup d' état* in 1799, had his disillusions ; and, suffering always from most uncertain health, he appears to have been anxious not to delay bringing out the results of his protracted inquiry and reflexion on the mental relations of mind and body. The book, as it appeared, has much less of system and orderliness than Cabanis would claim for it ; but it is more easy to understand the enthusiastic interest with which it was received at the time than the comparative neglect into which it has later fallen. With an expert's knowledge of all that had been discovered or surmised from Hippocrates downwards as to the human bodily constitution, Cabanis set himself to bring it into definite relation with the results of mental introspection pursued in the scientific spirit of Locke and Condillac. By analysis of his own, he was able to bring into view, with more clearness and precision than anybody before him, the whole range of organic sensibility underlying the external senses. Completely overlooked by Condillac, these " internal impressions," the simplest and most truly primordial of all human experiences, reaching back as they must do to the period of foetal life, were first understood by Cabanis in their peculiar psychological significance, more especially in relation to the earliest (apparently) automatic activities. But his merit lies less in a special discovery like this, important as it is, than in his grasp of the general position that, in their relation to bodily conditions and processes, the facts of mental experience are to be taken directly as such, apart from metaphysical construction. The "relations" to be established are purely phenomenal. His clear perception of this fundamental condition of scientific treatment lends a value to his results which is hardly lessened by the imperfect knowledge of the nervous system which belonged to his time. He distinctly anticipated the position at which all psychophysical inquirers now place themselves ; and, though in particular unguarded expressions, like that when he speaks of the brain as "*en quelque sort* digesting impressions" and as "performing organically the secretion of thought," he lets himself be overborne for the moment by the obviousness of the physical, yet even in the *Rapports*, still more in the later *Causes premières*, he shows himself well aware

of the unique import of conscious sensibility. The "relations" established are, indeed, for the most part of a very general kind; but this was inevitable at starting. As a general basis for the most developed doctrine of physiological psychology thus far attained, his exposition may still effectively serve. Certainly, nothing in its way so striking has yet been produced by other hand. Nor, for all the undeserved neglect with which he has been treated by later inquirers, has even this been unrelieved. An edition of the *Rapports* (and *Causes premières*), issued in 1844 by L. Peisse, is a model of careful and judicious commenting, all the more valuable because of the perfect freedom of animadversion which the editor feels bound to allow himself. This is the edition to be recommended to the student who wants to go beyond M. Picavet's admirable analysis.

Count Destutt de Tracy (1754-1836) has had still less justice than Cabanis from historians of philosophy. Lewes is almost alone in giving prominence to either, but, while he seizes fairly enough the importance of Cabanis, says nothing to the purpose in his two pages on De Tracy. Yet De Tracy was a very remarkable man, and a thinker whose performance is only less remarkable than his ambition. He now stands very well revealed in the biographical facts and characteristics recorded of him by M. Picavet, to which there is only wanting some more definiteness of detail towards the end. A self-contained man, of high and strenuous purpose, he had already been given to scientific study while playing the gay soldier at court. When the revolution burst, he was forward to resign all aristocratic privilege and range himself with the popular party, though never exaggerating the social and political evils that had to be redressed. Not all his patriotic ardour and self-sacrifice availed to save him from incarceration and imminent peril of death at the height of the Terror. When he escaped condemnation by the fall of Robespierre and was set free again, the studies which he had calmly pursued in prison had brought him so far as to see, by help of Condillac and Locke, that a "science of ideas" was the thing above all needful for the advancement of knowledge generally and for the conduct of life. This accordingly he proceeded to develop, with gradually widening view, in a series of Institute-memoirs from 1796, revised and recast for publication in 1798. He had then hold of his main conceptions, but their practical applications, educational and other, did not become clear to him till he was called to act (1799-1800) on the Council of Public Instruction; and it was with an educational purpose that he then gave to his philosophical views their systematic form in three parts (Ideology proper, Grammar, Logic) of *Éléments d'Ideologie*, 1801-5. Later on he added a fourth part, of Economics, and the beginning of a fifth part, of Morals, towards a treatise of "Will and its Effects," as his first three parts had together made up a treatise of "Understanding"; but, though he had still, in 1817, some twenty years of life before him,

his powers were then confessedly spent, and indeed it is hardly beyond 1805 that his philosophical impulse is to be reckoned. Up to that time it worked with freedom and efficiency. Two features of his thought are specially to be noted. (1) It is undoubtedly from him that the import of conscious muscular activity for the psychological problem of object first got distinct recognition. Condillac in France, Hume and Berkeley in England, had (after Locke) each more or less clearly faced the problem; Rousseau, whose psychological tact (in *Émile*) deserves more acknowledgments than it has got, had descried the perceptual value of the motor factor. But it was De Tracy that first put all together and, though not without some wavering, laid the foundations of a scientific theory which many hands have since helped to rear. To the conception of object as primarily *obstacle*, one finds, on reading, that he had already given the most definite expression; and there are other points of moment in the theory, as the prior objective character of the subject's own body in relation to all others, which he anticipated with equal clearness. (2) Before Comte, and in a profounder way than Comte, he conceived of human knowledge as an inter-related system of positive sciences. The very designation "positive," which has made its fortune in the present century, is in use with De Tracy and others of the school. Comte, there can be no doubt, took it from that source, and if he had learned also the need of starting with what De Tracy liked to call the "History of our Means of Knowing," his work of scientific ordering might better have claimed its assumed title of Philosophy. Particular ideas, too, commonly regarded as most characteristic of Comte, are plainly foreshadowed in De Tracy or Cabanis. These M. Picavet does not overlook; and, altogether, he is well justified in placing the great Positivist among the "Auxiliaries, Disciples and Continuers" of the two Ideological leaders.

The hundred pages under this title (399-497), in which he proceeds to muster these, with excellent effect, from all departments of science and literature, can here only be mentioned; nor can more be done for his final chapter (pp. 498-570) on the "Third Generation," in which are grouped round Degérando (Dugald Stewart's friend) and Laromiguière a number of minor figures, spanning the whole time till with MM. Taine, Ribot and others the movement of scientific psychology in France was started afresh under foreign stimulus. Among the direct adherents of Cabanis and De Tracy the man of greatest mark is Maine de Biran; the chief interest of his work, however, lying in the extent to which he afterwards broke away from their lead. Him M. Picavet leaves here aside (except in the way of frequent incidental reference), but only to reserve him for special study in connexion with a newly recovered Institute-memoir from the days of his Ideological enthusiasm.

A few pages of "Conclusion" (571-83, followed by some *inedita*

as appendix) are the less to be overlooked, because here M. Picavet does what he can, in other way than by the much-missed index, to bring together the multiplex threads of his whole inquiry. In the last paragraphs of all, there is a striking imagination of the state of mind of an Ideologist transported from the beginning of the century, when he worked so confidently for human enlightenment and progress, to the century's end with its vast increase of scientific knowledge but also increasing sense of the limits set to positive science and its ever-growing burden of social difficulties and perils. The Ideologist, it is allowed, would have to abate much of his practical optimism, and could no longer deal so lightly as he did with philosophical questionings because they had failed of decision. None the less he might truly claim to have done a real stroke of work in his day. He had broken ground in every one of the lines upon which psychology has since advanced,—an effort only partially recognised in the foregoing notice but admirably shown in the book itself. He had also had his own measure of philosophic insight when he proclaimed that all other human search and all human striving should own the sway of a science of "Ideas".

G. Croom Robertson.

Vorlesungen über die Algebra der Logik (*Exakte Logik*). By Dr. Ernst Schröder. Leipzig: B. G. Teubner. Vol. I. Pp. 717.

The appearance of the first volume—a very bulky one—of Dr. Schröder's great work marks an important stage in the progress of Exact Logic. With the exception of the brief former paper of the same writer (*Der Operationskreis des Logikkalkuls*) the subject has hitherto received no presentation in Germany; and, for the purpose of making it accessible to the reader who approaches it for the first time, this presentation is practically the only thing that yet exists in any language.

Mr. Charles S. Peirce, to whom Symbolic Logic owes its present state of development, wrote his papers with the brevity and abstractness that befit a scientific journal. Dr. Schröder's book will be objected to on the ground that it is unnecessarily diffuse; but it should be remembered that the subject has had hard work to get itself recognised, and that it is a principle of psychology that a certain degree of voluminousness in a sensation is essential to the producing of a lasting impression. It must be admitted that the book is discursive to the last degree. On the other hand, it is not undesirable that everything that can be said, by way of elucidation and reinforcement, should once be said; coming books can be written with all the greater conciseness. It goes without saying that Dr. Schröder's book is a work of true German thoroughness, and patience with teasing details; it will

be impossible hereafter for any one to write upon the subject without having made himself familiar with the views set forth in this volume.

The plan of Dr. Schröder in his book follows closely upon that of Mr. Peirce as set forth in Vol. III. of the *American Journal of Mathematics;* that is to say, all the formulæ are established by analytical proofs based upon the definitions of sum, of product, and of the negative, and upon the axiom of identity and that of the syllogism. (Later it is found necessary to add another axiom to cover one of the two parts of the distribution law.) The proofs are, for the most part, the same as those given by Prof. Peirce, but frequently alternative proofs are given in addition, and occasionally the method of treatment varies. Dr. Schröder considers it an important difference between his treatment and that of Mr. Peirce that with him (in this first volume) the letters stand for classes (p. 290), while with Mr. Peirce they stand for statements. This is not a strictly correct account of Mr. Peirce's treatment. The great effect which that writer has had in at once simplifying and extending the whole body of logical doctrine (not merely its symbolic exposition) is based upon his *identification* of the proposition with the relation of illation. It is plain that (provided universal propositions are taken as not implying the existence of their terms) there is no difference between

The statement P implies the statement P_1, or, if P then P_1, and

The term t implies the term t_1, or, every t is a t_1,

as far as the part they can play in a logical structure is concerned. The relation between P and P_1 and the relation between t and t_1 are both sufficiently defined by saying that they are transitive relations, in the sense in which the term is used by De Morgan; that is (if we use a common sign $\leqslant$ to express the common relation), we shall have for a (dual) definition of the relation

$$s \leqslant p$$

(whether s and p stand for terms or for propositions), *whatever* p *is, that* s *shall also be;* or, *whatever is* s, *that shall also be* p. Expressed symbolically, this will be—

$$s \leqslant p$$

is-the-same-thing-as

$$(p \leqslant x) \leqslant (s \leqslant x) \qquad D_1$$

and is-the-same-thing-as

$$(x \leqslant s) \leqslant (x \leqslant p), \qquad D_2$$

where x stands for anything whatever. This is, as it happens, in strict accordance with Mill's account of the proposition; he says (*Logic*, eighth edition, p. 135) that it asserts that "*all things which have* a certain attribute have along with it a certain other

attribute," which is exactly what is asserted in D. Either D or D_1 amounts to a statement of the *dictum de omni* (in one the $s \prec p$ plays the part of a major premise, in the other of a minor premise);[1] and Mill agrees with De Morgan that to give any real meaning to the *dictum de omni*, we must consider it not as an axiom but as a definition. In speaking of the relation $s \prec p$ in words, it is necessary to use the language either of the term or of the proposition; but everything that has just been said of subject and predicate must be taken as having also been said in terms of premise and conclusion, or of antecedent and consequent (for it makes no difference for this purpose whether, in 'S-is-followed-by P,' the following is of a logical or of an extra-logical nature).

While this definition gives all the marks of "all . . . is," or of 'is-always-followed-by' that are essential to the building up of the logical discipline, it does not (nor is it necessary to) distinguish them from other transitive relations, such as, for instance, is-an-ancestor-of. It has, I believe, not been noticed that the non-symmetrical negative copula, 'none but . . . is,' is also included in the same definition. The proposition "none but the brave deserve the fair," considered as a statement concerning "the brave," has a distinctive copula, which I have proposed to symbolise thus: $b \overline{\prec} d$. Now the syllogism (easy in real life but without the pale of the ordinary Logic)—

> None but the brave deserve the fair,
> None but those who deserve the fair are happy,
> $\therefore$ None but the brave are happy—

exhibits exactly the same transitiveness as the syllogism in Barbara. Symbolically expressed, it is—

$$b \overline{\prec} f,\ f \overline{\prec} h,\ \therefore b \overline{\prec} h.$$

That is to say, the character of transitiveness is possessed by the negative non-symmetrical copula as well as by the copula "all . . . is".

To return to Dr. Schröder, it is hence not strictly correct to say that in the development of the subject by Mr. Peirce the letters in $x \leqslant y$ represent statements. After it has been shown that, for the purposes of Logic, there is no difference between the transitive relation for terms and the transitive relation for propositions, it is assumed by Mr. Peirce that in $x \leqslant y$ the letters stand for *either* terms or propositions at pleasure. Dr. Schröder,

[1] It must be noticed that the dictum as ordinarily stated is a very insufficient description of the syllogism in Barbara, inasmuch as it leaves out the part played by the minor premise altogether. As it stands, it covers only immediate inference from the universal to the particular; to cover syllogism it should read: "Whatever can be affirmed of the whole can be affirmed of *whatever can be shown to be* a part of that whole," *i.e.*, of what the minor has affirmed to be a part of that whole.

in his second volume (the advance sheets of part of which lie before us), develops the transitive relation for propositions, after having done it in the first volume for terms. There are marks of difference between the two owing to his assumption that every *proposition* can have solely the values 0 and 1 (p. 256); that is, that every proposition is (during the limits of the discussion) either always true or always false. But this is a most unfortunate restriction. Why exclude from an Algebra which is intended to cover all possible instances of (non-relative) reasoning such propositions as 'sometimes when it rains I am pleased and sometimes when it rains I am indifferent'? This restriction is the cause of a distinct error on the part of Dr. Schröder. He considers that

$$x \lessdot y + z$$

is of a different content, according as the letters stand for terms or for propositions. It is true that if y or else z is said to be a *logical* consequence of x, then the logical consequence of x is either always y or always z (or both); and it is also true that, on the other hand, 'men are all either honest or else unhappy' is satisfied by some individuals being honest and other individuals being unhappy. But so also any *material* propositional sequence, such as 'If it rains, either I stay in or else I take an umbrella,' is satisfied by some *instances* of its raining being followed by my staying in and all other instances being followed by my taking an umbrella. Dr. Schröder, in fact, seems to pay too little attention to material following. Logical following has its exact parallel in the proposition in the case of the singular subject. 'She is either a queen or a fairy' does not admit of part of her being a queen and part of her being a fairy. There seems, in fact, to be a close relationship between the logical sequence between propositions, and the sequence between terms when the subject is singular. Again, Dr. Schröder, after showing that, for propositions,

$$(a \lessdot b) = \bar{a} + b,$$

that is, that

'If some are not wise, some will be unfortunate' is-equivalent-to

'Either all are wise, or else some are unfortunate,' asks, what could be the meaning of this if a and b stood for terms instead of for propositions? The answer is very easy. The last sentence is an abbreviated form—made possible by the accidents of language (see my paper on "Some Characteristics of Symbolic Logic," *Am. Jour. of Psychology*, 1889)—for the complete statement,

'All possible cases are included in cases of all being wise together with cases of some being unfortunate,' or,

'"The possible" implies that all are wise or else that some are unfortunate'. That is, the full expression for the equation written above is—

$$(a \lessdot b) = (\propto \lessdot \bar{a} + b).$$

When a and b are terms, this is—

'All a is b' is-the-same-thing-as 'everything is either non-a or else b,'

a transformation which is as valid and as simple for terms as it is for propositions.

In his treatment of the signification of the negative term,—a subject upon which very many logicians have gone astray,—Dr. Schröder virtually sets forth the correct doctrine (for instance, on p. 337), but not with quite sufficient constancy or clearness. It is true that there is not much difference between the presence of a quality and the absence of a quality, and hence that the signification of a negative term is of very much the same nature as that of a positive term, *so long as the quality which marks its signification is one and indivisible.* It makes no difference whether we divide numbers up into even and not-even or into odd and not-odd. But the case is very different when we come to complex qualities. We may set forth symbolically the two-fold force of a term in the following fashion: Since the aggregate of objects to which it applies is of the nature of a logical sum, and the congeries of qualities which it implies is of the nature of a logical product, the full import of a term, as civilisation, c, will be—

$$c = (C_1 + C_2 + \ldots\ldots\ldots)\ \gamma_1\ \gamma_2\ \gamma_3\ldots\ldots$$

where C_1, C_2..... stand for all the different instances of its application (as the civilisation of the Assyrians, that of the Greeks, and so on), and γ_1, γ_2, γ_3..... stand for all the elements which are essential to its signification (as, being in the possession of good laws, ensuring the safety of the person and of property, securing a certain amount of happiness to a considerable number of individuals, &c.), and where each one of the instances has all of the essential qualities attached to it. What will then be the negative of the term civilisation? It will be, in accordance with the usual rule for taking the negative—

$$\bar{c} = \bar{C}_1\ \bar{C}_2\ \bar{C}_3\ldots\ldots(\bar{\gamma}_1 + \bar{\gamma}_2 + \bar{\gamma}_3\ldots\ldots);$$

that is, the non-civilisations are, at once, not any one of the civilisations, and at the same time they have the quality of *being deficient in some one, at least,* of the qualities that are essential to a thing's being a civilisation (the qualities, that is, in the absence of any one of which we should refuse to apply the name). The intent of the positive term and of the negative term are therefore extremely different; the one involves a *combination* of quality-elements, the other an *alternation* of absences of quality-elements. It is only in the case of terms of indivisible intent (as hot, cold, blue, heavy, parallel) that the difference between them becomes insignificant. When, therefore,

Lotze "wittily" says, as quoted by Dr. Schröder (p. 99), that it remains a for ever insoluble task to abstract the qualities of the *not-man*, he says what is true but unimportant. *Not-man* is not destitute of intent, as Lotze says it is, but its intent consists in *an alternation of deficiencies of some one, at least, of the elements of the intent of man.* This Dr. Schröder virtually says when he says that the characteristic group of marks of man do not occur in not-man, "or not completely" (p. 337). But he does not distinctly state the doctrine that the signification (intent) of a positive term is of the nature of a logical product, while that of a negative term is of the nature of a logical sum.

In Dr. Schröder's discussion, twenty pages long, of the import of negative judgments, there is a greater amount of error mixed up with a large amount of sound and much-needed doctrine. He shows, with justice, that it is a strange oversight on the part of logicians to say that 'A is not B' is the denial of 'A is B'. It is so only in case A is a singular term. 'All A is B' is denied either by 'not all A is B' or by 'some A is not B,' and not by 'all A is not B'. But it does not follow that the *not* in a negative sentence must always be attached to the predicate term. Schröder would discard from logic altogether such sentences as "geese are-not swans," and substitute for them "geese are not-swans"; that is, he would uniformly interpret the sentence as ordinarily printed "geese are not swans" (where the meaning is "no geese are swans"), in the latter sense and not in the former. While the mistake of ordinary logicians is due, as Dr. Schröder points out, to their forgetting, for the moment, the existence of other-than-singular subjects, he commits himself the corresponding error of neglecting the study of non-simple predicates, and of predicates separated by phrases from the copula *are-not.* Take the first negative sentence I come to on opening a volume of MIND: "Moral intuitions are not, any more than intellectual intuitions, simple and original". Here the effort to think the *not* an attachment to the predicate, simple-and-original, is quite futile. It is true that such sentences as "All A's are not B's" are ambiguous, and hence that a strict rhetoric requires us to avoid them; and that, moreover, when they do occur they are usually to be taken in the sense of the particular negative (that is, with the *not* attached to the *all*), as in "All that glitters is not gold". Nevertheless they are of frequent occurrence when the *all* is not expressed but understood; and, moreover, a negative copula is needed for the expression of the proposition "no A is B". Far from presenting any difficulties in a symbolic treatment of logic, the copula "no . . . is" or "is-wholly-not" has two very important advantages over the copula "all . . . is" or "is-wholly". In the first place, it is not necessary, in solving problems, to transpose all the terms into the subject,—there is no (logical) difference between subject and predicate. In the second place, the number of theorems which constitute the body of the doctrine is re-

duced by one half,—a single statement with this copula is the representative of a statement together with its dual opposite in terms of the other copula. These are advantages which are possessed by both of the symmetrical copulas, 'no A is B' and 'all but A is B'[1]; and by neither of the unsymmetrical copulas, 'all A is B' and 'none but A is B'. 'All A is B' has, of course, a great superiority in point of naturalness, but the others ought not to be treated as if they were non-existent.

When it comes to the solution of problems, Dr. Schröder discards altogether Mr. Peirce's method, which consists in a consistent carrying out of the properties of the copula $\leqq$, for the far simpler method of first reducing the second member of the statement to "zero," or "non-existent,"—that is, of transposing all the terms into the first member of the statement. His treatment of this part of his subject could not be improved upon.

A number of interesting points we have left ourselves no room to speak about. Dr. Schröder proves that subtraction and division are inexecutible operations, and that the words are pure nonsense-words in Logic. He also shows that only an historical interest attaches to the labours of Boole in the field of symbolic Logic. A particularly interesting passage is that in which he proves that the second subsumption of the distribution-law, *viz.*,

$$a\,(b+c) \leqq ab+ac,$$

cannot be deduced from the other axioms and the definitions, by showing that in the logical calculus of groups all these other axioms and definitions hold but that this subsumption is not true. Into that calculus, however, the idea of the negative does not enter; hence it is only proved that the above subsumption cannot be deduced from the axioms and definitions exclusive of the definition of the negative.

CHRISTINE LADD FRANKLIN.

Spinoza's Erkenntnisslehre in ihrer Beziehung zur modernen Naturwissenschaft und Philosophie. Allgemein verständlich dargestellt von Dr. Martin Berendt und Dr. med. Julius Friedländer. Berlin: Mayer & Müller, 1891. Pp. xix., 315.

In spite of all that has been written about Spinoza, the authors of this work have contrived to say something new. There are important differences in the theory of knowledge as set forth in Spinoza's successive works—the *Short Treatise*, the *De Intellectus Emendatione*, and the *Ethica*—and, even in its final form, it is held to be far from clear by most of those who have expressly examined it. I know of no other discussion which can compare

[1] It is virtually in terms of this copula that Mr. Mitchell has developed his Algebra of Logic.

for thoroughness with that of the present writers. They hold that Spinoza's view—hitherto misunderstood or neglected—is not only perfectly consistent, but of the greatest importance for the true understanding of his philosophy: showing especially the harmony of the scientific and idealist aspects of his thought. Much ingenuity, both of argument and illustration, is displayed by the authors in defending this position. A concluding chapter—itself occupying more than a third of the volume—is devoted to a controversial vindication of it. The style throughout is clear and forcible, and the earlier chapters are well adapted to interest the educated public as well as professed students of philosophy. But why, we may be allowed to ask, do German publishers send out books in such a 'questionable shape'? Are German readers too short-sighted to notice misprints? Are page-headings of no value to them? Do they despise a table of contents because they always—unlike Dr. Johnson—read books through?

To the authors, Spinoza is the philosopher *par excellence*. The content of his teaching—apart from its scholastic form—is, they say, in immediate touch with all the problems of our time, and in complete agreement with the results of modern science, the fundamental principles of which he anticipated (pp. ix., xiv.). In works to follow on the Metaphysics and Moral Philosophy of Spinoza, the authors seem to contemplate a complete exposition of Spinoza from this point of view. The present work breaks the ground by its new explanation and defence of Spinoza's Epistemology: especially of the relation between *Ratio* and the *Scientia Intuitiva*, and of the true meaning and importance of the latter. Spinoza, they hold, is the true intuitive philosopher.

Spinoza's official statement of the different kinds of knowledge is given in the second scholium to *Eth.* ii. 40. There he distinguishes the first kind as Imagination or Opinion, got either by the 'experientia vaga,' which determines sense-perception, or from the spoken or written symbols, which call up ideas of things. To this kind of knowledge belong all inadequate and confused ideas, and it is the only source of falsity. Truth and adequate ideas result only from the second and third kinds of knowledge; namely, Reason and Intuition. Reason depends upon the fact that we have notions common to all men and adequate ideas of the properties of things; Intuition proceeds from the adequate idea of the formal essence of certain attributes of God to the adequate knowledge of the essence of things.

If I may put very briefly the authors' interpretation of this doctrine, I should say that Imagination is the knowledge of every-day life; Reason, the method of science; and Intuition, the exercise of scientific and philosophical genius, of artistic insight and creation. Taken in general, this interpretation seems to me suggestive and valuable; but it does not seem to me capable of being fully reconciled with the spirit or letter of Spinoza's writings.

With regard to the first kind of knowledge, little need be said except with regard to its relation to Reason. Reason, according to our authors, investigates the laws of the material world, seeks a knowledge of the properties not of the essence of things, and uses the method of experimental research (p. 40). It is afterwards added that it has to do with the mental as well as material sciences—the attribute of thought as well as that of extension (p. 178). There is an attractive boldness in making Spinoza's 'Ratio' a pattern of modern experimental method. And the authors have said what can be said in favour of their view. Spinoza was himself keenly interested in experimental research; and the value and necessity of experiment is pointed out in the *De Int. Em.* In that treatise also, the kind of knowledge which corresponds to the 'Ratio' of the *Ethica* is spoken of as twofold in method—either proceeding from effect to cause or drawing a conclusion from some universal. But this kind of knowledge is still regarded by Spinoza as inadequate. The one passage in the *Ethica* upon which the authors rely for their doctrine that 'Ratio' proceeds by observation and experiment is in ii. 29, schol., where the mind's inadequate ideas are said to be due to its being determined externally by the play of circumstances while it has clear ideas when determined from within "by regarding several things at once to understand their agreements, differences and contrasts". But it is not clear that Spinoza is thinking of experiment here. It is certainly not so brought out in the sequel to which he refers. He is contrasting the ideas produced from within with the inadequate ideas produced by 'experientia vaga'. Spinoza speaks of this latter in very similar terms to those in which Bacon refers to the 'inductio per simplicem enumerationem'; but he does not speak of any sifting experimental process whereby the one—knowledge derived from sense-impressions—may rise to rational knowledge. On the contrary, adequate ideas can with him only proceed from adequate ideas. Thus in *Epist.* 42 (June 10, 1666) he says both that "all the clear and distinct perceptions which we form can arise only from other clear and distinct perceptions," and that these perceptions "are in us and do not acknowledge any cause external" to us. Nor may we forget that in the express definition of Ratio (where it is made to depend upon the fact that we have notions common to all men and adequate ideas of the properties of things) there is no reference to particulars of observation or experiment, but only to that which things have in common, namely, as regards bodies, the attribute of extension, and motion or rest (ii. lemma 2). In face of this, I cannot think that the authors make good their contention that Spinoza's conception of 'Ratio' coincides with the modern conception of scientific method.

These points, however, they try to meet. One consideration which they hardly face is the bearing upon their view of the eternity which Spinoza ascribes to rational method. They lay

stress indeed on the point that reason is said to regard its objects only *sub quddam æternitatis specie;* but in the same sentence Spinoza says that the objects of reason must be conceived without any relation to time. If we follow Spinoza's view of 'Ratio,' as having only timeless objects, how can we say that it is the method of modern biology or of modern psychology?

Reason may, as Spinoza teaches, lead to a different kind of knowledge which he calls intuitive; but the nature of this intuitive knowledge is left almost entirely unexplained by him. The authors compare it with Habit in the practical sphere, and point to its activity in speculative genius and artistic insight. But the nature of these activities and the way in which they arise out of reason are not very clearly explained by the authors. Nor is it at all certain that Spinoza would have admitted the identification of his intuitive knowledge with (*e.g.*) the stroke of genius by which Kepler reached his conception of the law of planetary motion (p. 58). It would be hard to show that this conception was reached by a different kind of mental process than the other hypotheses which he successively formed and rejected. They were rejected by him and it was preferred, not because it was a stroke of genius, and they were not, but because it explained the facts and they did not. And yet how could the false as well as the true conception be the object of Intuition, seeing that Intuition has only true ideas as its object?

In comparing or identifying Intuition with scientific or philosophical genius, the authors seem to overlook the fact which they elsewhere lay great stress upon, that the object of Intuition is the individual. The following passage states their view with great clearness:—

"Whilst the object of rational knowledge is the mechanical movements of the material world and its laws, on the other hand, the object of intuitive knowledge is the essence of things, the real content of nature and its creatures—which receives expression in these mechanical movements. This content we have recognised to be in Spinoza's view Desire (Cupiditas), the will of beings and their impulse to self-preservation" (p. 99).

This essence,—too, as the authors properly insist,—the force to persist in one's being, is not mechanically determined but proceeds from the eternal necessity of the nature of God (ii. 43 schol.). As they further insist—following indeed closely in Spinoza's footsteps—it must be distinguished from Continuance or Existence which depends on external circumstances. The essence of man is therefore—argue the authors—his character; which is accordingly free and independent. And thus the authors draw the conclusion that when we look upon things not from the merely rational point of view, but with the artistic—and prophetic—glance of intuition, we shall see human characters and even States constantly reborn: Alexander the Great, in Cæsar and Cromwell and partially in Frederick the

Great and Prince Bismarck; while (amongst States) imperial Rome, of course, lives again in modern Prussia. In spite of the length at which and the evident seriousness with which this idea is developed, only one or two points of criticism upon it can be suggested here. In the first place, there is no room in Spinoza's theory for this occasional and spasmodic rebirth. The immortality which is to be found in Spinoza's view of things is eternal or timeless being of particular things. Especially, the idea of a partial reappearance of a particular thing (or man) is entirely foreign to his view. Secondly, it is true that character must be constant and unchangeable, if Spinoza's eternal individuals are characters. It might have been expected that if this were the authors' meaning they would not have used the term Character in its full concreteness; and yet they do use the term so as to include even the passions of man, which must therefore, in consistency, be looked upon as unchanging. In the third place, the basis of the whole speculation is the proposition that the essence of a thing is its tendency to persist in its being. But surely this proposition cannot stand by itself. The essence of a thing is to persist in its being. What then is its being? The authors do not answer the question; but Spinoza's answer is plain. In asserting that in the human mind there remains something which is eternal (v. 23), Spinoza at the same time asserts that this eternal something which belongs to the essence of the mind is a mode of thinking or idea.

W. R. SORLEY.

VIII.—NEW BOOKS.

Das Genie. Vortrag Gehalten im Saale des Ingenieur—und Architektenvereins in Wien von FRANZ BRENTANO. Leipzig: Verlag von Duncker & Humblo. Pp. 38.

This booklet is worthy of its author. It is a masterpiece of psychological analysis. The question discussed is whether the difference between genius and mere talent is one of degree or of kind. In dealing with it a happy application is made of the Cartesian rules—to divide each of the difficulties under examination into as many parts as possible and to ascend step by step from what is simplest and easiest to what is most difficult and complex. Scientific genius is distinguished from artistic and the genius exhibited in imitative art is distinguished from that exhibited in creative art. It is easy to show by the testimony of the great masters of science and by analysis of their work that the intellectual operations of epoch-making discoverers do not differ in kind from those of ordinary men. So far all is plain. The difficulty begins when we turn from science to art. Nearly all great poets, painters, sculptors and musicians agree in ascribing their productions to a kind of inspiration. Is psychological explanation possible in such cases? Can the inspiration of a Goethe, no less than the tentative groping of a Lessing, be accounted for as the result of ordinary mental processes? Brentano thinks that it can. In the case of imitative art the difficulty is comparatively slight. What is essential here is vivid and discriminative vision together with persistent and clear retention of those features of natural objects which are efficient in the production of artistic effect, as distinguished from the irrelevant circumstances by which this effect is impaired and obscured. But this power of selective insight admits of all gradations. It belongs in some degree to many persons who possess no extraordinary artistic gifts. It amounts to genius when it is so rapid, vivid, and complete as to render superfluous the use of rules, and the laborious groping, which seeks its end by repeated trials and failures. For imitative art, then, the difference of genius and talent is one of degree, not of kind. The case of creative art is more complex. But the frequent union of great creative and great imitative powers in the same person points to their fundamental affinity. On closer examination we find them to be connected in so intimate a way that the explanation which has been given for imitative genius may by a simple application of psychological principles be extended to creative genius.

The more distinct and vivid a certain class of presentations is, the more keen and persistent is the interest which they inspire in the subject, the more frequently will they tend to recur in the train of ideas. Further, not only is reproduction aided by these conditions, but production also of *similar* presentations is facilitated. Custom dominates all departments of our mental life. When a circumstance has once made us angry, we become on that account not only more apt to feel anger on the recurrence of the same incident, but also more prone to anger in general. This applies to forms of ideal combination as much as to the ideas combined. One who enjoys epigrams and eagerly listens to them finds that new ones occur to him the more readily for that reason. Similarly we are apt to acquire something of the style of a favourite author apart from any express attempt at imitation. This principle

enables us to connect the creative power of an artist with the vividness of his artistic interest and the keenness of his artistic apprehension. The same power which enabled Mozart at the age of fourteen, after a single hearing of the Miserrere Allegris, to write down from memory the whole complicated work without one error, serves also to account for his greatness as an original composer, who without thinking of rules and without tentative efforts commanded an unfailing flow of new, complex and beautiful combinations.

EDITOR.

The present Position of the Philosophical Sciences. An Inaugural Lecture. By ANDREW SETH, M.A., Professor of Logic and Metaphysics in the University of Edinburgh. London and Edinburgh: William Blackwood & Sons.

After a graceful reference to his predecessor, the newly-elected Professor proceeds to examine the special value of Logic, Psychology and Metaphysics, respectively, as instruments of intellectual training. He then considers the "present outlook in the three departments" and "the way in which a philosophical Professor should shape his work at the present time". "If we penetrate beneath the surface and examine the foundations on which Logic rests, it becomes impossible to maintain a rigid distinction between it and Metaphysics and Epistemology. For that reason the very conception or definition of the science has long been matter of keen debate, and at present the aspect of things is confessedly chaotic." But the chaos "is of the kind which portends and accompanies growth, and bears on it the promise of future order". Prof. Seth says a good word for "the ordinary formal logic, originally based upon Aristotle". It has, he thinks, a distinct educational value and "its names and distinctions have entered so largely into the thought, and even the familiar language of the civilised races, that a certain acquaintance with its forms and processes may well be demanded in the interests of historical culture". It is noteworthy that Prof. Seth ignores symbolic logic. What is said about Psychology is of especial interest and value. "It is certain that in the near future no philosopher will speak with authority, or will deserve so to speak, who does not show a competent acquaintance with the best work in psychology." "The marvellous activity displayed" in this department "is perhaps the most notable feature in the present state of the philosophical sciences". Such work as "Mr. Ward's masterly treatise in the *Encyclopædia Britannica* and the rich and stimulating volumes published a year ago by Prof. James of Harvard" may "not unreasonably be taken as marking the new departure that has been achieved in psychology —the critical maintenance of a purely psychological standpoint, the wider range of material, the more minute and experimental analysis". Prof. Seth has the courage and the insight to say that the "experimental psychologists magnify their office overmuch". The field of experiment is necessarily limited to "those cases where we are able to manipulate the physical and physiological processes which condition mental facts". "Within these limits, the results are often so contradictory as to leave everything in doubt; where definite results are obtainable, their value is often not apparent." This is indeed a word in season. Prof. Seth, however, thinks it "impossible that so much patient ingenuity should be devoted to analysing the sub-structure of our mental life without ultimately important effects upon our knowledge of the psychological mechanism". Turning to Philosophy proper, Prof. Seth declares his opinion that "the outlook is not discouraging".

The time has gone by in which "the vast strides made by science" diverted men's attention from "the problems which lie beneath and behind all science. Among the points on which a true philosophy should lay stress, most prominence is given to the necessity of a teleological view of the universe." "It is only when contemplated in the light of a realised idea that any one speaks of a series of changes as steps in an evolution: a speculation which does not see that evolution spells purpose has not made clear to itself the difference between progress and aimless variation." On the whole this inaugural lecture contains a most luminous and judicious statement of the position and prospects of Philosophy.

EDITOR.

Le Crime et la Peine. Par LOUIS PROAL, Conseiller à la cour d' Aix. Ouvrage Couronné par l'Académie des Sciences, Morales et Politiques. Paris: Alcan. 1891 (dated 1892). Pp. 544.

This prize essay has been written by a magistrate with some twenty years' experience. In a prefatory *rapport* M. Martha remarks that it is a sober and well-ordered treatise, not brilliant but marked by moral dignity, elevated sentiments, and urbanity towards opponents. This is a very just appreciation. M. Proal's standpoint is non-scientific and non-philosophic; one is at times tempted to describe it as anti-philosophic. The book is an attack on Darwinism and Determinism. With Darwinism M. Proal associates the so-called "positive" school of law connected with the names of Garofalo and E. Ferri, and the Italian school of criminal anthropology connected with the name of Lombroso. With the cause of Determinism, against which the latter half of the book is directed, he associates the well-known names of Herbert Spencer, Fouillée, Guyau, and Tarde. Caro and M. Jules Simon are the writers to whom he himself chiefly looks for philosophic instruction. M. Proal's chief characteristic is common-sense—a somewhat dangerous characteristic. He demolishes Determinism with the same ease with which Dr. Johnson demolished Idealism. He illustrates his own remark that magistrates exhibit "an extreme attachment to common-sense, an excessive love of tradition, and an exaggerated scepticism with respect to new ideas". His book is certainly free from novelties, dangerous or otherwise. At the same time, as the work of a man who has had a long acquaintance with the more practical sides of the matter he is discussing, it is not altogether without value, although this value is for those who are interested in the medico-legal aspects of criminality rather than in its scientific or philosophic aspects. His criticism of the exaggerations into which the criminal anthropologists have sometimes fallen is frequently just, and his position is very sound in opposition to those who try to reconcile the old and the new schools by retaining the conception of penality while dropping that of culpability: either the criminal is guilty and must be punished in a prison, or he is suffering and must be treated in an asylum; to admit that the criminal is a sufferer and then to punish him is to place the magistrate in an awkward and inconsistent position. M. Proal appears never to have heard of the experiments that have been made in the treatment of criminality. He makes no mention of the indeterminate sentence nor of the Elmira Reformatory. He takes it for granted that to regard the criminal as a subject for reformation rather than for punishment is to encourage crime. But—in this country at all events—the criminal frequently dreads the asylum and the workhouse much more than the prison, and will not easily consent to a plea

of insanity. The book is chiefly interesting because it expresses with unusual intelligence and erudition the traditional conceptions of criminality current among lawyers and magistrates.

H. Ellis.

Ueber Bewegungsenpfindungen. Von E. B. Delabarre. Freiburg i. B.: H. Epstein, 1891. Pp. iii., 111.

This investigation,—a Freiburg dissertation, written under Dr. Münsterberg's direction,—is a somewhat disappointing contribution to the literature which deals with the sensation of movement; although it contains good experimental work. The author prefaces his book with a general introduction, which is little more than a reproduction of Dr. Münsterberg's theory of volition. This is followed by a critical discussion of the nature and constituents of the sensation of movement, which is in many ways suggestive, but by no means conclusive. But for a misunderstanding of Wundt's present position, it would hardly have been necessary to devote two and twenty pages to disproving the existence of central innervation sensations: for Loeb's recent revival of the theory has small psychological importance. In the paragraph which deals with muscle-sensations is to be found the common confusion between *Spannung* and *Contraction* or *Verkürzung*. It is to be hoped that the two latter terms will some day be banished from Muscle-physiology, to be replaced by *Erregung*,—which is clearly and definitely distinguishable from *Spannung*. Dr. Delabarre, again, hardly proves his point that the sensation of movement is an "unmittelbare Empfindung," and not a "Vorstellung". In the second part of the research is recorded the author's experimentation upon the exactness of our estimation of the extent of a movement. It was found, in general, that those distances were judged equal whose "sensory elements" were judged equal. Any disturbing influence exercised upon the latter judgment, if it were not apperceived as a disturbance, acted upon the former also. Where the re-agent was conscious of the introduction of a new factor, he always made allowance for it: but such correction was not exact. These rules are valid for the comparison of successive as well as of simultaneous movements. In the former case, of course, the time-error has to be taken into account.

It is to be hoped that Dr. Delabarre will continue his work in this direction. There is much to be gained from such experiments: while those here reported (as the author admits: pp. 91, 103, 105, 107, 110), are in many cases not numerous enough to warrant the drawing of a definite conclusion. It would also be well to put to the test of experimental investigation several points which are taken for granted in the course of the discussion.

E. B. Titchener.

Éducation et Positivisme. Par R. Thamin. Ancien élève de l'École normale supérieure; chargé du cours de pédagogie à la Faculté des lettres de Lyon, 1892. Pp. iii., 186. Felix Alcan (Bibliothèque de Philosophie Contemporaine).

As an inquiry into the nature of the influence of Comte and his disciples upon education this work occupies a unique position. Comte himself left unfulfilled the promise made in the *Cours de philosophie positive*. Only from his remarks upon Gall and from the general principles laid down in his own writings can we gather what would have been the character of his pedagogy. In all probability the master would

have been dissatisfied with the attempts of his disciples to atone for his silence. Although Comte would perhaps have acknowledged that an encyclopædic system such as his own might well be tested by the method of education deducible therefrom, yet attempts to explicitly formulate such a method have been singularly few. This poverty of positivist pedagogic literature has been commented on by M. Compayré, who tells us in his *Histoire Critique des Doctrines de l'Éducation en France* that Robin's *L'Instruction et l'Éducation* is the only contribution of any importance from contemporary positivists. To this may be added Lallemand's *Education Publique.* We may pass over the attempts of the triumvirate, MM. Littré, Robin and Wyrouboff, to carry their precepts into practice, for the school they started failed, as M. Littré laments, for lack of students, staff, and salaries. If we cast about us for the principles from which the positivist pedagogy may be deduced, we find them in the "law" of the Three States and the classification of the sciences. The hypothesis of the Three States is the parent stock upon which successive authorities have grafted further hypotheses. The classification of the sciences was subjected by Comte to certain restrictions, which, however, have been rejected by his disciples. It is the application to education of these two dogmas, distorted as they sometimes seem to be, beyond recognition, that M. Thamin sets himself to discuss. How is the Law of the Three States applied to pedagogy? According to M. Thamin it is applied in Spencer's adoption of Pestalozzi's principle that the genesis of knowledge in the individual must follow the same course as the genesis of knowledge in the race. There is, he thinks, a fallacy in the identification of these two processes; *viz.*, that of the evolution of the mind of man throughout the past, and that of the education of the individual intellect. "Humanity is not a being but a series, several parallel series of generations, and there are countless interruptions to the continuity of thought." The positive instinct should have prevented positivists from yielding to the temptation to realise abstractions, to treat collectivities as persons, to consider humanity as a single being of regular growth. But assuming the application to be legitimate, the question at once occurs: If heredity marks out the limits and periods of intellectual progress, if evolution does its work as faithfully and inevitably as Spencer asserts (*Education*, p. 76), must not education in most cases be tantamount to the "unconscious carrying out of a programme the combinations in which are anterior to us and escape our influence"? Perhaps Mr. Spencer merely wishes to frustrate the premature attempts of an inexperienced master, and to teach the value of the adage *festina lente.* The danger, however, still remains that masterly inactivity on the teacher's part may be misinterpreted by his pupil. Silence gives consent, and therefore non-intervention is impracticable. And there is the yet further danger that the teacher may mistake the course of evolution and modify the young intellect in the wrong direction. The temptation to anticipate the future would be sometimes irresistible. Why not skip the second state and go on to the third? An experienced teacher might well suppose in many cases that pressure on his part would be the exercise of charitable foresight. Thus, concludes M. Thamin, either the teacher must abdicate his functions altogether, or he must exercise the worst form of intolerance, *i.e.*, methodic intolerance. I think, however, that M. Thamin is probably making too much of Mr. Spencer's section on this point. He evidently has not noticed the remarkable difference between the forcible preliminary statement: "The education of the child *must* accord," &c., and the weaker form of the final summing up: "In deciding upon the right method . . . an inquiry into the method of

civilisation *will help* to guide us". (*Education*, pp. 75, 77. Italics mine.) The application of the dogma of the classification of the sciences to pedagogy by Littré, Narval, and others is ably handled. Attention is drawn to the wild pretension of the positivists that their system closely follows nature and confines itself to responding to the secret instincts of the intellects they are forming. Mr. Spencer presents us with the paradox that the criterion of any plan of education is that it should excite pleasure in the child, "for a child's intellectual instincts are more trustworthy than our reasons". This, says M. Thamin, is the negation of discipline, method, and "I may add of all progress". The author might have given as the best instance of the concrete results of such a system the experiments at Yasnaia Poliana. Most teachers will, I think, be found to agree with Mr. Spencer's "paradox," if presented in a less dogmatic form. We certainly should be guided to some extent by the likes and dislikes of a child, but experience shows us that it is easy and dangerous to attach too much importance to them. But how far is dislike due to bad teaching?

Although positivism was powerless to carry into practice its principles, it has nevertheless exercised an influence, the more potent because it has been indirect. The classification of the sciences, incapable of giving a plan to education, has given it a *mot d'ordre*—science. The general idea of recent positivism may be summed up as a definition of end and means. "Science the end and humanity the means." The main body of Comte's doctrine has been relegated to obscurity. Positivism was a school; now it is a mere label. M. Thamin proceeds to show how an esoteric positivism was formed, and how doctrines anterior to positivism itself were incorporated by it, thereafter appearing as ramifications from it. For example, "Comte proclaimed himself a disciple of Gall. All modern disciples of Gall, in grateful reciprocity, proclaim themselves disciples of Comte." The introduction of physiology into psychology is positivism. Again, positivism must be utilitarian. Economists, historians, sensualists and empirics are all affected by the same influence. "The formula in which is summed up positivism properly so-called is also a summary of the whole movement of ideas of which the word positivism is now the clearest symbol."

The rest of M. Thamin's volume is devoted to a detailed criticism of the pedagogy of Spencer, Bain and J. S. Mill. To the schoolmaster in this country these studies should be of exceptional interest. In Spencer's *Education* and Prof. Bain's *Education as a Science* we find laid down general principles, the truth of which has never been overtly challenged. In fact, with the exception of the late Mr. R. H. Quick, it may be said that from a theoretical standpoint no criticism of their doctrines has been forthcoming. Want of space forbids me to discuss the formidable indictment M. Thamin has drawn up against Mr. Spencer. Prof. Bain is more gently handled. The copious detail of *Education as a Science* would naturally give plenty of opportunity for criticism, but M. Thamin confines himself mainly to Prof. Bain's treatment of a few great principles, such as: the doctrine of natural reactions; the value of object lessons; the sketch of secondary studies (pp. 390-396); the classics (pp. 359-387); (Bain, pp. 247-268), &c. The chapter on John Stuart Mill treats of the education of Mill himself, and also of the educational principles laid down by him in his Logic address at St. Andrews, &c. An appendix contains a vigorous assault upon the theoretical and practical positivism which has led to the attack in France upon the teaching of philosophy even in its universities. To sum up. As a contributor to the history of pedagogy, M. Thamin is practically on

untrodden ground. The influence of positivism has been barely touched upon by either French or English writers. The book therefore fills a gap. As a contribution to the question of the respective values of the ancient humanities, modern humanities, and science, as the basis of secondary education, this volume will be welcomed in France; for it appears "at the right psychological moment". Finally, schoolmasters in this country will find M. Thamin a safe guide. We should certainly be grateful to him for his sane, temperate, and convincing criticism of the views of the theorists who have exercised most influence on the educational systems of this country.

W. J. GREENSTREET.

Causalität und Entwicklung in der Metaphysik Augustins. 1. Teil. Inaugural Dissertation zur Erlangung der Doctorwürde der Philosophischen Facültät der Universtät Jena Vorgelegt von JOHANNES CHRISTINNECKE: G. Neuenhahn, Universitäts-Buchdr, 1891.

In this little *brochure* Dr. Christinnecke gives us a brief summary of the cosmological and metaphysico-theological doctrines of Augustine, Bishop of Hippo. Augustine's mission was to prove that Greek metaphysic and Christian dogma could be united in a rational system of the universe. He constituted himself the exponent of the natural philosophers who found themselves at the same time members of the comparatively new Christian community at the commencement of the fifth century A.D. The problem the physicists, or metaphysicists, of the Christian creed had to face was, how to reconcile the abstract theories respecting the origin and maintenance of the order of nature with the account of the Divine procedure of creation found in the Christian Scriptures. The modern man of science has to harmonise theory with fact, but a Christian philosopher like Augustine had to harmonise rational theory with Christian dogma. Of the possibility of the success of such a task he never had any doubt, his maxim was *qui scripturam inspiravit, naturam creavit.* The Author of Nature was the Author of the Scriptures, and, therefore, he who read the one must be able to interpret the other. Augustine had in common with the Platonist metaphysicians for the material of his speculations two orders of being: (1) ideas existing in the Divine Mind as the types or *summa genera* of created things; (2) the various species and classes of the organic and inorganic phenomenal world. The former had their copies in the human intellect and afforded the principles by which the latter were interpreted. God created the phenomenal world. By the creative impulse a chain of necessary causation was set up. Phenomena classified themselves in accordance with primordial types. A potential tendency was given to each class to perpetuate itself. Development is the process by which causal efficiency operates. This potential tendency is the all-pervading principle in Augustine's history of nature, contrasting strongly with the conception of *adaptive agency* dominating modern theories of the origin and development of species. The acorn develops into the oak, the oak sheds its acorns and so the species is perpetuated. But whence was the first acorn and how was it endowed with such potentiality? Here the possibility of having recourse to an order of ideal existences stood the ancient natural philosophers in good stead. Phenomenal classes (Gattungstypen) are to ideas as the dividing members are to a logical genus. Dr. Christinnecke considers that Augustine was inclined to carry his theory of *germinal potentiality* informing nature into the Pantheism discernible in the world-soul of Plato (p. 31). Comte and

Mill endeavoured to banish the idea of potentiality from the domain of science, but it persists. We remember Prof. Tyndal in his Belfast address to the British Association alluding to the infinite potentialities of matter. Dr. Christinnecke seems still to cherish this doctrine, which he says (p. 58) is not even contradicted by the accepted theory of Darwin. This remark of Dr. Christinnecke scarcely shows much critical acumen, since the Darwinian theory of the origin of species through the action of adaptation, selection and survival is in direct antagonism to the principle of native potentiality. The problems dealt with in this pamphlet are supremely important alike to scientists and to theologians, and we thank Dr. Christinnecke for so compendious a presentation of them.

T. Woodhouse Levin.

University Correspondence College, *Tutorial Series. A Manual of Logic.* By J. Welton, M.A. London, B.A. Cambridge, Late Scholar of Gonville and Caius College, Cambridge. Vol. I. London: W. B. Clive & Co., 1891. Pp. 536.

Mr. Welton's work is not a Manual of Logic for students, but rather a compendious book of reference for teachers. Logic is a subject bristling with debatable points. On these Mr. Welton endeavours to focus a mass of current opinions, and his task cannot be regarded as untimely or unwelcome. Mr. Welton has marshalled his authorities with some attempt at reasoned arrangement, but we think he is more apt at collating than digesting material, and he has a disappointing habit of summing up conflicting views with such extreme impartiality that his verdict is practically nugatory.

The scope of Mr. Welton's book does not extend beyond the ancient syllogism, although some notice is taken of the modern amplifications of the theory of reasoning introduced by Hamilton and De Morgan.

Mr. Welton does not claim originality for much in his treatise, but a new method of diagrammatically representing categorical propositions is suggested (in § 106) based on the implications of existence contained in a categorical proposition. This scheme seems a combination of the existential theory adopted by Dr. Venn, and Lambert's mode of representing the extension of a term by a horizontal straight line. In fine, Mr. Welton's book has a *raison d'être*, and although it might have been better done, it is perhaps better so done than not done at all.

T. W. L.

Die Pädagogik des Helvetius. Inaugural Dissertation zur Erlangung der philosophischen Doctorwürde. Von Demetrius G. Mostratos. Berlin, 1891. Pp. 56.

This pamphlet sketches the history of the theory of education in France, beginning with the writings of Rabelais, 1495, and Montaigne, 1533. Next, the Method of the Jesuits, 1491, is described, having for its single aim the maintenance of the authority of the Roman Catholic Church. Then follow the Jansenists, 1585, or Port-Royalists, who, although Catholics, had not the domination of their Church so much in view as the development of the individual. For their system the cultivation of the mother-tongue and a knowledge of the contemporary sciences were made the principal objects of study. The establishment of the French Academy by Richelieu in 1585 marks an era in the history of French education. The most notable educationists during the 17th century in France were Bossuet, Flénelon and Fleury, who were suc-

ceeded by Rollin whom Villemain styled the High Priest of Education. In the 18th century we find Diderot propounding an answer to the question, Who ought to regulate and undertake the education of a Community? His answer was, 'The State'. Fénelon had previously announced the same opinion and it was afterwards warmly supported by Helvetius and Robespierre. In 1762 Rousseau's Emile appeared, a work in which the principle propounded was that education should develop without perverting the nature of a child. Helvetius, the immediate subject of this pamphlet—1715-1771—formulated a plan of Education in conformity with the psychology of Locke, whose views on the origin and nature of human knowledge, had obtained through the writings of Condillac wide acceptance in France. According to the *tabula rasa* doctrine, the mind received its entire equipment from experience and as in Childhood this experience must be moulded by others, *i.e.*, by education; the art of education acquired a paramount importance in the eyes of Helvetius. Dr. Mostratus gives us the following analysis of the system of education, proposed by Helvetius. (1) Helvetius considers education to be the art of persuading a child to educate itself. (2) The aim of education should be, that subsequently proclaimed by Jeremy Bentham,—the greatest happiness of the greatest number of citizens. (3) The period of education extends over the whole of life, although, of course, childhood and youth are the most important seedtimes. (4) A child's most potent instructor is its environment. (5) The factors of education are:—Opportunity, Attention, Self-love, Desire and Passion. (6) Education must be *physical*, for the development of the body and *Moral* for the inculcation and fostering habits of right conduct; it must commence in the family but generally be completed in public establishments.

T. W. L.

A Study of Greek Philosophy. By ELLEN M. MITCHELL, with an Introduction by William Rounseville Alger. Chicago, S. C. Griggs & Company, 1891. Pp. 282.

Miss Mitchell thinks with her German teachers that philosophy is the outcome of the evolution of the human intellect striving to know itself. "What is the world," she asks, "independent of our thought, our representation of it? Is there any knowledge of it distinct from and independent of human self-knowledge?" (Ch. i. p. 3.) On this idealist thread Miss Mitchell proceeds to string the successive phases of Greek speculation from the Ionics to the Neo-Platonists.

The two leading questions determining the direction of Greek Philosophy were, according to Miss Mitchell. (1) "What lies at the basis of all the changes which the senses perceive?" *i.e.*, "What is the substance out of which the world is made?" (2) "How is the world made?" These two questions, she adds, "taken together express the main problem of Greek Philosophy". "How do matter and form unite?" (Ch. ii. p. 6.) The character of the answers given to these questions by the successive Greek schools Miss Mitchell seeks to interpret in a popular manner. Her style is easy and graceful.

Further Reliques of Constance Naden: being Essays and Tracts for our Times, with Introduction and Notes by GEORGE M. MCCRIE. London: Bickers & Son. Pp. xx., 260.

This volume contains an Introduction comparing Miss Naden with several women most eminent in our literature, with a conclusion which

must gratify those persons who were her personal friends. Part of the Introduction and also several Appendices by writers other than Miss Naden are devoted to expounding and supplementing her own expositions of Hylo-Idealism. Sixty pages are occupied by her essay on the Geology of the Birmingham District. There is a paper defending Utilitarianism against Mr. Lilly, one on the Evolution of the Sense of Beauty, and one on Religion, the lesson of which last is that modern science and Hylo-Idealistic psychology demand that we must "banish all transcendental phantasms from our positive creed to the domain of poetry and art". Philosophic readers will however be chiefly interested in some "Philosophical Tracts" explaining more directly her conception of the mission and result of Philosophy. Philosophy is "the science which takes for its subject-matter the whole sphere of consciousness, and has for its object the detachment and systematisation of the ultimate principles of thought and conduct, and the exhibition of their point of unity". Mental and moral philosophy are one: for the empirical laws of logical procedure and those which constitute our working concept of duty, "must be shown to spring from one central law of reason".

In a tract on Transcendental Psychology she criticises T. H. Green's doctrine that there must be some unit other than feelings and relations between feelings, namely, the subject. She holds that the complete synthesis, which from one point of view may be called the universe, from another point of view the ego, is the only real unit. Further tracts follow under titles including Scepticism, Cosmic Identity, and Scientific Idealism. Cosmic Identity she defines as constancy of relation, and regards as the fundamental truth of philosophy.

The reliques as a whole present the same characteristics as the volume entitled Induction and Deduction did; freedom and felicity of expression, and seriousness of moral purpose. Miss Naden had developed her style by poetical composition; and she believed that philosophical doctrine could influence the moral purposes of individuals, and the course of social movements.

Manual of the Science of Religion. By P. D. Ch. De La Saussaye, Professor of Theology at Amsterdam. Translated by Beatrice S. Colyer-Fergusson (*née* Max Muller). Longmans, 1891. Price 12s. 6d.

The Science of Religion as here treated exhibits the human mind in phases which no mental science has a right to neglect, now that the historical method has vindicated itself. Professor De La Saussaye has adopted the method of stating the prevalent opinions upon these general problems and then adding his own decision These judicial deliverances lay him open to the charge of usurping a sort of Chief Justiceship, but they are so modestly stated that we think his procedure justifies itself, as at least imparting a tone such as is indispensable in any effective teaching. Amongst the topics which come under brief treatment in this way are the Sufficiency of the mechanical theory of Evolution as applied to the history of religion; the question of the relative priority of morality and religion; the relative functions of the subjective and the objective factors of human experience; and others. Brief as the treatment is we think M. De La Saussaye has succeeded in his attempt to give an intelligible outline to the Science of Religion, coherent in itself and full of suggestion. After the general outline of the Science of Religion, an excellent summary of the chief contents of Religious system is given under the designation *Phenomenology*, which occupies about one-fourth of the volume, and deals generally with worship and its objects, Institu-

tions, such as Sacrifice, Prayer, Sacred Seasons and Places, and the Forms of Religious Doctrine. Here, again, the conclusions of eminent workers in the field are stated and to some extent compared and estimated. This section is so happy a combination of succinctness with copiousness that we are inclined to consider it the part of the work likely to be of most service to the general student.

Then begins the treatment, under the title of *Ethnographic Section*, of the actual religious systems of history ; the first division of this giving a rapid survey of the religions of communities which preceded the civilised nations or which still continue in independence of them. This is perhaps the least interesting section as here treated, for less than a hundred octavo pages could hardly be expected to do much for so varied and manifold a subject. The remainder of the volume—about one half —is occupied with the first instalment of the purely *Historical Section*, and covers the Religions of China, Egypt, Babylonia and Assyria, and India. So far as it goes the volume is complete, but a gentle threat is uttered by the Translator, that the remainder of the work will remain untranslated if this first portion does not seem to meet any real demand.

The bibliography of the subject is very amply worked out : not only before each Section are the general authorities given, but before the several Chapters references are given to the specific authorities. The contributions of German, French, Dutch and English publishers, scholars, and anthropologists, are taken impartially into view and a clue is thus provided to a literature of almost unmanageable extent and variety. The translation forms a very good scientific style in itself, but we have not compared it with the original and do not therefore vouch for its accuracy. A few Germanisms occur, causing some sentences to require a second reading : but they are not numerous, and perhaps serve a useful purpose in reminding us of the authorship of the book. We would not discourage the preparation of the second volume, but there can be no doubt that to the general student the continuation of the historical section will not be of so much interest as the General Introduction and Phenomenology in this volume which, as the Translator allows, 'forms a book by itself'.

A. Caldecott.

The Human Mind. A Text-book of Psychology, by James Sully. 2 vols. London : Longmans, 1892. Pp. xvii., 501, 390.

"The present work is an expansion and further elaboration of the doctrine set forth in the author's *Outlines of Psychology*. Although the mode of arrangement and of treatment will in the main be found to be similar, the book may be described as a new and independent publication. It is specially intended for those who desire a fuller presentment of the latest results of psychological research than was possible in a volume which aimed at being elementary and practical. Hence much more space has been given to the new developments of 'physiological' and experimental psychology, to illustrations of psychological principles in the phenomena of racial and animal life, of insanity and hypnotism. At the same time, an effort has been made to illustrate the obscurity and debatableness of many of the problems of the science, and to aid the reader in arriving at a judicial conclusion on these points by historical references to the main diversities of doctrine. In this way it is hoped that the treatise will find its proper place beside the *Outlines*." (Communicated by the Author.)

IX.—PHILOSOPHICAL PERIODICALS.

Philosophische Monatshefte. This number begins with G. Schneege's second and concluding article on Goethe's "Verhältniss zu Spinoza und seine Weltanschauung". Goethe like Spinoza regards God as impersonal and as immanent in the world. But this impersonal immanence is not conceived by him in a strictly Spinozistic sense. God for Goethe was not merely the logical ground of all existence, but a creative activity positively revealed in the concrete variety of the world. Again he differs from Spinoza in holding God to be essentially unknowable except as He reveals Himself in nature and in man. This revelation is essentially teleological. God is in nature as immanent self-realising purpose. Each individual exists for its own self-development, and its self-development is the self-manifestation of God in it. God is unknowable except as thus revealed in the world which is perpetually created and sustained by His indwelling purposeful activity. The primal phenomena of nature and of moral experience are also beyond the range of knowledge. In this metaphical resignation Goethe approaches Kant as in his ethical resignation he approaches Spinoza. The consequence of ethical resignation is with him as with Spinoza inward peace. But the inward peace of Spinoza was constituted by adequate knowledge, that of Goethe by unselfish activity in the service of man.—"Wilhelm Wundt's System der Philosophie," Johannes Volkelt. Wundt's theory of the primacy of will is keenly criticised. The derivation of all cognitive and rational consciousness from the interaction of volitional activities which are in themselves devoid of all content is rejected as absurd. The individualism of Wundt is also assailed. Thus his account of the unity of human society is said to be inadequate, because it leaves no place for laws governing the spiritual development of the community as such and distinct from those which govern the spiritual development of the individual as such. The same criticism is applied *mutatis mutandis* to Wundt's account of the ultimate unity of the universe, as constituted by the combination of an infinite multiplicity of interacting units of volitional activity. It is urged that the rational order of the world presupposes a universal immanent reason, for which there is no place in Wundt's System. In general the Wundtian philosophy is characterised as not "logistic enough". It is in fact a monadistic Schopenhauerism.—Dr. Lipps in his "Zweiter ästhetischer Litteraturbericht" notices among other works, "*La Morale dans le Drame, l'Épopée et le Roman*," by L. Arreat; "*L'Art au point de Vue Sociologique*," by Guyau; "*L'Esthetique du Mouvement*," by Souriau; and Richard Maria Werner's "*Lyrik und Lyriker*". —As against Arreat, Lipps maintains that no peculiar aesthetic effect is produced by the form as distinguished from the matter of a work of art. "A painting which stands in a dark corner produces no artistic effect. I give it a suitable position and place it in a suitable light. Artistic effect is the immediate consequence. What is it due to? Is it to be referred to the appropriate light, or to my art in bringing the appropriate light to bear upon the picture." The theory which makes "form of combination the source of distinctively aesthetic enjoyment, ought logically to adopt the latter alternative. On Guyau's treatment of aesthetics from a sociological point of view, Lipps observes: "What is considered and interpreted from the point of view of something else

ought in the first instance to be considered from its own point of view. . . . Before assigning to it its place in a more general and comprehensive system, we must determine what it is in its own intrinsic nature. . . . This is forgotten by Guyau and by many others who with good reason place all kinds of objects, especially those which belong to Psychology, in a social or sociological, a psychological, a biological, an evolutional point of view. They look at their object from this or that standpoint without knowing what it is they are looking at." Lipps by his detailed criticism justifies this general accusation. Souriau is praised for making detailed studies of particular aesthetic problems instead of confining himself to the empty generalities which satisfy many writers. On the other hand he is blamed for attempting to explain psychological facts by irrelevant physiological and physical considerations. Lipps challenges Souriau's view that we seek the pain of effort for the sake of the pleasure of relief from effort. He maintains like Dr. Ward that pleasure has its source in an economy of psychical activity. Successful activity as such is pleasant. So far as it is obstructed by obstacles which it fails to overcome, it is painful. Dr. Lipps himself, in conjunction with Rich. Maria Werner, is issuing a series of "*Beiträge zur Æsthetik*". The first instalment of this series is Werner's "*Lyrik und Lyriker*," which investigates the stages and laws of growth of a lyrical poem in the mind of the poet. The data used are the poems themselves, the testimony of the poets as given in their diaries, letters, and conversation, as well as the reports and researches of others. The second contribution is *Der Streit über die Tragödie*, Von Th. Lipps. It is according to the author's account predominantly polemical being directed against all attempts to read into tragic poetry preconceived philosophical theories instead of adopting a purely objective point of view.—Friederich Jodl's *Geschichte der Ethik in der neueren Philosophie* is reviewed by J. Keryenbühl.—Stein's "*Leibniz und Spinoza*" is criticised by J. P. N. Land. The substantial merit of the book is admitted, but a number of minor inaccuracies are pointed out.

Philosophische Monatshefte.—XXVIII. Band., Heft 1 u. 2. E. v. Hartmann, zum Begriff der unbewussten Vorstellung—M. J. Monrad, Ueber das Gebet:—F. Tönnies, Werke zur Philosophie des socialen Lebens und der Geschichte, Erster Artikel (H. Spencer, Sociologie, Bd. iii.). [An interesting exposition and criticism.]—Recensionen—Literaturbericht, etc.

Philosophische Studien.—Bd. vii., Heft 3. W. Wundt—Bemerkungen zur Associationslehre. [An essay called forth by the controversy upon Association of Ideas, which has been raging for the last two years between Lehmann and Höffding. The "laws" of Association are reduced by Wundt to those of Contiguity and Partial Identity.] A. Kirschmann—Die psychologisch-æsthetische Bedeutung des Licht-und Farben-contrastes. [An investigation into the significance of light-and colour-contrast for painting. The skilful use of contrast enables the painter to reproduce with the nearest approach to truth natural effects which, in their absolute relations, are entirely out of his reach.] O. Külpe—Das Ich und die Aussenwelt (i.). F. Angell—Untersuchungen über die Schätzung von Schallintensitäten nach der Methode der mittleren Abstufungen. [An important contribution to the discussion of psychophysical method. The method of doubled stimuli, and the *Verhältnisshypothese* of the dependence of sensation upon stimulus (so far as it is based on the methods of mean gradations and of doubled stimuli) are excluded, it is to be hoped finally, from the sphere of psychophysics. The results of Prof. Angell's experimentation (obtained with Starke's

apparatus: *Phil. Stud.* iii. pl. 3) conformed pretty exactly to the requirements of Weber's law.] G. Martius—Ueber den Einfluss der Intensität der Reize auf die Reactionszeit der Klänge. [A continuation of the writer's previous work "Ueber die Reactionszeit und Perceptions-dauer der Klänge" (*Phil. Stud.* vi.), prompted by Prof. Stumpf's criticism. The special question here investigated is the influence on reaction-time of the strength of the stimulus. It was found that, in spite of differences of intensity in the stimulus, the time of reaction for practised and attentive observers remained the same within a tolerably extensive portion of the musical scale.] A fuller discussion of the first two and last of these articles will follow in the next number of MIND.

[E. B. T.]

ARCHIV FÜR GESCHICHTE DER PHILOSOPHIE.—V. Band., 1 Heft. In a second instalment of his "Beiträge zur Geschichte der englischen Philosophie" Herr Frendenthal gives a most interesting account of Sir William Temple. Temple was born in 1553 and entered King's College, Cambridge, in 1573. After three years blind worship of Aristotle he became convinced of the weakness of the scholastic logic and in 1580 he attacked it in a polemical work directed against his old teacher Everard Digby. This was followed by a series of other writings in which he assails the current Aristotelianism. Aristotle's Physics, Metaphysics, and Ethics are criticised with great zeal and acuteness from the standpoint of Ramus. The fundamental conceptions of the *Physics* in the doctrine of causes, the account of privation, the discussion of motion, time and space, are according to Temple incoherent and untenable, and the topics treated in it belong properly to Logic. He deals with the *Metaphysics* in like manner. His criticism of the *Ethics* is specially interesting because in it he is not dependent on Ramus, who had only touched on ethical questions in a few scattered remarks not utilised by Temple. The points assailed are the division of virtues into intellectual and ethical, the distinction between the faculty which apprehends necessary and that which apprehends contingent truth, the identification of the highest good with activity of the intellect, the doctrine of the mean, and the list of special virtues. We find in Aristotle "pro summo bono summa pene miseria, pro morum probitate singularis impietas; pro eleganti præceptione frigidæ quæstiunculæ".

Temple like Ramus believed that he had shaken himself free from the fetters of scholasticism. But in this they were both self-deceived. It did not enter the mind of either master or disciple to call in question the fundamental principles of the system, which they opposed. Thus Temple holds that the content of the general concept constitutes the essence and existence of particulars. From the immanent concept of man, the particular men—Socrates, Plato, Cicero—derive both matter and form. The form is the real essence of things. Universals form the only proper object of science and deduction is the only scientific method. A is more knowable than B if A is required to explain B. Thus "causa effecto absolute clarior est"; "sic in physiologia elementum notius est quam meteora, metalluni, planta, quia declaratio et cognitio ex elementorum doctrinâ repetitur". The writings of Temple and of Digby help in large measure to clear up the obscurity which veils the beginnings of English Philosophy. On the one hand we find at this period an attempt to revive scholasticism by the aid of Aristotle,—a scholasticism which was however modified by admixture of mystical elements. The chief representative of this tendency is Everard Digby. On the other hand there is the anti-scholastic movement of the disciples

of Ramus, who attack Aristotle and demand a science of nature and of life instead of futile quibbles. The most important exponent of this way of thinking was William Temple. Both Digby and Temple show a wide acquaintance with the contemporary philosophical literature of Europe The works of Temple as well as the letters of Ascham bear eloquent testimony to the close intercourse then subsisting between learned men in England and their confreres on the continent. Temple was successively secretary to Sir Philip Sidney, to Davison, and to the Earl of Essex, and he was a favourite of Cecil. He therefore belonged to the social circle with whom Bacon was most intimately connected. "No one can now determine who cast the first spark of new philosophical ideas into Bacon's inflammable mind; but it may be safely assumed that his long intercourse with so clear, learned, and stringent an opponent of scholasticism as Temple must have nourished and strengthened, if it did not create, his aversion to the dominant philosophy.—Dion Chrysostomos als Quelle Julians. Karl Prœchter—Leibniz über das Principium indiscernibilium. C. 1. Gerhardt. [Contains a hitherto unpublished letter of L. on this subject.]—Zur Echtheitsfrage des Dialogs Sophistes. Ernst Appel—Nachträge zur Disposition der Memorabilien. A Döring—Platon und Aristoteles bei Apollinarios. Johannes Dräseke—Jahresbericht über sämmtliche Erscheinungen auf dem Gebiet der Geschichte de Philosophie.

In the INTERNATIONAL JOURNAL OF ETHICS (Oct. 1891), Prof. L. Schmidt writes on 'The Unity of the Ethics of Ancient Greece'—a paper somewhat too slight for the question discussed, which does not admit of a simple answer—and Prof. A. Fairbank writes on 'The Ethical Teaching of Sophocles'. Dr. F. Adler discusses the practical 'Problem of unsectarian moral instruction'; his solution is that moral instructors in State schools should teach—pedagogically and not as the preachers—the rules of duty accepted by "all good men," leaving the question "why one ought to do what is right" to be answered by philosophers and theologians. Prof. J. Platter's article, however, on 'the right of property in land' reminds us that "all good men" are not agreed on the practical application of the eighth commandment. Prof. Platter does not hold with Mr. Henry George that landlords ought to be at once expropriated without compensation; but he has no doubt that private property, being the product of "force, war, and oppression," will become immoral as soon as the productivity of labour becomes sufficiently high. Prof. H. C. Adams on the other hand, in a politico-economical 'Interpretation of the social movements of our time,' contemplates private property as stable; but considers that "the ethical sense of society must be brought to bear on business affairs, and must in many cases supplant the competitive principle"; and he looks forward to the realisation of "industrial liberty" by restraints on the now "irresponsible power" of capitalists. From the point of view of ethical theory the most interesting articles are those on the 'Theory of Punishment' by the Rev. H. Rashdall, and on the 'Prevention of Crime' by Dr. F. Tönnies. The former is a lucid and careful defence of the utilitarian view of punishment recognising elements of truth in the retributive view. Dr. Tönnies' paper shows grasp rather than lucidity: but his criticism of existing penal law—whether regarded as retributive, deterrent or reformatory—is penetrating if too sweeping. His view of penal law as it ought to be, in which Disablement and Reparation appear to be the main ends, will be more fully explained in subsequent papers.

VIERTELJAHRSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE, XV., ann. 4.—H. Höffding, die Gesetzimassigkeit der psychischen Activitat.—This is a discussion of the free-will question. Indeterminism according to Höffding has its source in a psychological illusion and in an ethical fallacy. The psychological illusion is accounted for by five conditions. (1) Exclusive interest in a final decision of the will makes us forget the processes which led up to it. (2) When our minds are once made up there follows a sense of inward harmony and freedom from restraint, which excludes the thought of determining conditions. (3) If, nevertheless, we do succeed in recalling our previous state of suspense, we are apt to realise the past so vividly that rejected lines of conduct again appear to us as possible alternatives awaiting our decision. We thus fail to judge them in the light of the event which realised only one of them. (4) Our mental condition in the moment in which we look back with remorse to a past deed is widely different from that in which we framed the resolution to act. It is difficult to identify our present with our past self. It is often the easiest course to transfer to our past condition some of the characteristics which belong only to our present. There thus arises a tendency to attribute to the past self at once the impulse which formerly led to the regretted decision and the impulse which now leads us to regret it. (5) In deliberation the future appears to us in a twofold light; on the one hand as it would be affected by a certain action; on the other as it would turn out apart from this action. Our attention oscillates between these pictures, and this mental oscillation leads us by a fallacy of confusion to regard the future as really indeterminate. The *ethical* fallacy arises from a false view of responsibility. When we say to a man: 'You ought to have decided in such or such a way,' this deliverance by no means rests on determinist assumptions. We only represent to the man the contrast between his actual volition and that which he must himself recognise as the right volition. In this sharp contrast there lies a spur to the will. Ethical judgments of approval and disapproval have practical value only in so far as they become *motives*. Now determinism is the doctrine of the complete *motivirtheit* of the will. It is therefore difficult to see how determinism can be irreconcilable with ethical principles. E. Grossè—Ethnologie und Aesthetik. A powerful plea for the analysis of the conditions of æsthetic judgment and investigation of the growth of æsthetic activity among primitive races. In this way only, it is urged, can simple data be found. At present Æsthetics is baffled by the bewildering complexity of civilised art. F. Rosenberger—Ueber die fortschreitende Entwickelung des Menschen-geschlechts (erster artikel). It is contended that as in the individual, so in the race, growth in knowledge involves growth in the power of acquiring and extending knowledge. The whole argument is based on the assumption that acquired modification of brain-structure are transmitted by heredity. A. Marty—Ueber Sprachreflex, Nativismus u. Absichtliche Sprachbildung. A severe criticism of Steinthal's account of Humboldt's position and significance in the development of thought on this subject. M. Offner—Ueber Fernwirkung und anormale Wahrnehmungsfahigkeit. An interesting account of M. Richet's experiments on clairvoyance. The writer makes out a good case for the hyperæsthesia hypothesis. H. Höffding has a long and interesting notice of W. Bolin's book on "*Ludwig Feuerbach, sein Wirken und seine Zeitgenossen*".

PHILOSOPHISCHES JAHRBUCH.—Bd. iv., Heft 4. Gutberlet—W. Wundt's System der Philosophie (Schluss). Sinameier S.—Beleuchtung

einer philosophischen Kritik der optischen Wellentheorie. Thill—Das Fundamentalprincip aller Wissenschaften. Michel—Die Kosmologie des Moses Maimonides und des Thomas von Aquino in ihren gegenseitigen Beziehungen. Recensionen und Referate. Zeitschriftenanschau. Miscellen und Nachrichten.

Rivista Italiana di Filosofia.—An. vi., Dit. 2. L. Ambrosi—L'immaginazione nelle sue relazioni normali e morbose colla sensibilita. P. D'Ercole—L'origine indiana del pitagorismo secondo. A. Piazzi—Luigi Vives, pedagogista del rinascimento. S. Ferrari—La filosofia di Empedocle. Bibliografia. Bollettino pedagogico e filosofico. Recenti publicazioni.

Rivista Italiana di Filosofia.—An. vi., Dist. 3. A. Nagy—Lo stato attuale ed i progressi della logica. P. D'Ercole—L'origine indiana del pitagorismo secondo. L. Ambrosi—L'immaginazione e l'inconscio nella vita prätica e nella scienza. G. Fontana—Sull' Estetica. Bibliografia, &c.

Revue Philosophique—Oct. 1891.—The first article is devoted to a criticism of Preyer's "law of the conservation of life" by S. Errera. Next comes a long and interesting essay "De la Possibilité d'une Methode dans les Problems du Réel". In two previous articles the author had reached the conclusion that the existence of a sensible phenomenon implies the existence of a real activity which produces sensation in the subject to which the phenomenon is presented. Starting from this standpoint, he now discusses the possible methods by which the nature of these metempirical realities may be investigated together with the nature of their real connexion which is phenomenally represented by spatial and temporal relations. Only two modes of dealing with this problem are discoverable. In the first the point of departure is our own being as revealed to self consciousness. The world is a unity and the beings which compose it cannot be absolutely disparate from each other. Having direct cognisance of one of them, we may therefore hope to gain a clue to the nature of the rest by analogical reasoning. Now what is most fundamental in our own nature is will. We may accordingly infer that every reality inwardly consists in some mode or analogue, however rudimentary, of volitional activity. But this result, which is all that the purely analogical method can yield, is vague in the highest degree. When we have thus defined real being in the abstract, we are still as ignorant as ever of the special relations by which real beings are connected with each other. We are as far as ever from any explanation of the general features of the phenomenal world by reference to the reality of which it is a manifestation. We have as yet no key to the cosmological antinomies and the nature of God, freedom, and duty. The inference by analogy from our own inward being to other beings is useful but it is quite insufficient. We must therefore have recourse to another method. We must cross-question phenomena in order to force from them the secrets of the real world which they at once reveal and conceal. Analysis of the nature of phenomena leads us to posit a reality on which they depend. By pushing this analysis further we may gain a clue to the internal nature of this reality. The author promises to pursue this line of investigation in an ensuing article. A. Calinon follows with a short article on "Les Espaces Geometriques". After a compact and lucid explanation of the conception of different kinds of space, of which the Euclidean is only one among others, an attempt is made to meet some common objections to such generalisations of geo-

metry. Here the writer implicitly assumes that there is no essential distinction between the evidence of geometrical relations as given in the intuition of space and that of physical uniformities inductively ascertained. He abstains, however, from the familiar question-begging illustrations. Next comes an "Enquête sur les Idées Générales" by M. Ribot. "When a general term is represented, heard, or read, what is there in consciousness besides the word itself—immediately and apart from reflexion?" M. Ribot has questioned 103 persons in order to obtain a "partial and provisional answer" to this question. He thus describes his method: "I said to the subject:—'I am about to pronounce a number of words; I wish you to tell me, immediately and without reflexion, whether each word calls up anything or nothing to your mind, and if it calls up anything to tell me what it is'. The answer was immediately noted down." Out of upwards of 900 replies the most frequent was "nothing," the only sensory image present in consciousness being the sound of the word. In other cases there was an image of some concrete example, which was sometimes accompanied by a visual image of the printed or written word. Sometimes only this typographical imagery was present. According as this or that class of imagery predominated in each individual, it was found possible to refer the subjects to three distinct types—the concrete, the typographic-visual and the audile. M. Ribot is aware that the method of experimenting with isolated words is somewhat artificial, because the unit of ordinary discourse is a sentence. He, therefore, made some trials in which abstract statements were substituted for abstract terms. The results obtained were exactly the same as in the case of detached words. It would seem, however, that in the sentence-experiments, he omitted to investigate what is perhaps the most interesting and important point. He asked his subjects what presentation each sentence as a whole called up, but he does not seem to have inquired what presentation this or that word called up at the moment of its occurrence as a component of the sentence. In conclusion, M. Ribot rightly points out that the reply "nothing" indicates sub-conscious mental process. The "nothing" cannot be really nothing, because the word is *understood*. It is harder to agree with Ribot when he says that persons of the concrete type think by means of their mental imagery, language being with them merely a vehicle of communication. Whether an image is present or not, the all-important "nothing" must be present, and this nothing is dependent on the word.

Revue Philosophique—Nov. 1891.—M. Fouillée, in an article on "Les Origines de notre Structure intellectuelle et cérebrale," criticises the Kantian philosophy. He interprets it throughout in a psychological sense, and he easily shows, from an evolutionist point of view, that so interpreted it is quite untenable. To those who have studied Kant under the guidance of Paulsen, Riehl, and Erdmann, such criticism will appear to be very wide of the mark. M. Gourd follows with a paper on "La Volonté dans la Croyance". M. Tarde gives a long report of the recent literature of criminology, in which he notes progress made in Italy by the sociological as opposed to the anthropological and statistical school. The principal books reviewed are Fouillée's "Idees-forces" and Picavet's elaborate work on "Les Ideologues"

X.—NOTES.

THE ORIGIN OF MUSIC.

I AM sorry if my article "*On the Origin of Music*" left it to my readers to suppose, that Mr. Spencer does not adequately recognise rhythm in the ordinary sense of the word as an essential component of music, and if I have not been sufficiently explicit in indicating under what specific meaning I wished to speak of it. I meant "rhythm to include keeping in time," that is, in the sense of the German *Takt*. Verse and song are both rhythmical it is true, but it is only the musician who has to keep time, dividing his sonant material into equal bars. This time-division gives music its essential and indispensable character, and the "time-sense" is the psychical source from which it is derived. I never ventured to say that musical rhythm is developed from rhythm in spoken verse; on the contrary, my chief aim was to show that primitive music is chiefly to be found "side by side" with, and quite apart from any kind of speech, the only thing common to both being that both are vocal utterances.

Again Mr. Spencer so much objects to his theory being called "speech-theory," that he treats this phrase of Gurney's as a nick-name, and assumes I have not read his writings. When making use of it I had in mind a remark occurring in his article in MIND, Oct. 1890, where he says, that the "distinct tones music uses might be developed from the indistinct ones *in speech*," and again another remark in his *Essays* (1891, ii. 406), where he speaks of three subsequent stages of the voice, the speaking voice, the recitative voice, and the singing voice. Then again, I remembered how constantly careful he is to quote (in his *Descriptive Sociology*) examples—and such examples only—where 'recitative' is the primitive form of music, and lastly the passage where he says, that the emotions from which music arises "comment upon propositions of the intellect," mentioning intellect as one of the two elements of which *speech* is compounded (*ibid* 421).

Further Mr. Spencer takes objection that I should credit him with having said, music arises from the intellect, whereas he had named the emotions as its origin. And in stating this he quotes his own words: "We may say that cadence, comprehending all variations of voice, is the commentary upon *propositions of the intellect*". Now it was precisely to this that I took objection, namely, that the emotions leading to music (or, as I put it more directly, music) should be held to arise as a commentary upon intellectual propositions; and I pointed to the physiological fact that emotion and intellect are associated with different parts of the brain and nervous system. The origin of emotions, and consequently of all their resulting products, must be independent of all propositions of the intellect.

With respect to his remark that it is not true to say speech is an expression of thought, I must again refer to those cases of aphasia, where the patient retains the language of the emotions, the power of uttering single words and of singing when the power of speaking connectedly has long been lost. Emotions have unquestionably a language of their own; from them *single words* may arise, but speech, so far as modern physiology and pathology can show, is an intellectual form of expression. Without

the aid of the intellect we are unable to express even our emotions in connected speech, while yet we may command an indefinite number of single words.

Mr. Spencer concludes: "The whole argument of the (his) essay is to show that it is from this emotional element *of speech* (!) that music is evolved". Certainly, but this emotional element, he says, grows up in proportion to the intellectual (*Essays*, p. 422), the changes of voice grow with the "more numerous *verbal* forms needed to convey our *ideas*". It is this dependence which I call in question; for the *growth* of the intellectual and emotional language are, physiologically speaking, in no connexion whatever.

RICHARD WALLASCHEK.

EXPERIMENTS ON COLOUR-VISION.

Fusion of Sensations of Colour.[1]—The author raises again the question of the central fusion of different simultaneous colour-sensations from the two eyes. He claims to have shown, in opposition to Helmholtz, and in support of Regnault and Foucault, that such fusion is a fact. This claim is based upon the results of experiments with stereoscopic figures whereby different colours perceived, one by each eye, are superposed upon each other. He finds the resulting image to be of the colour arising from the mixing of the two. In using the stereoscope for the purpose, dim light and saturated colours give the effect most clearly —or instantaneous illumination in a dark chamber. The same results may be secured without a stereoscope by focussing the eyes back of stereoscopic pictures at such a distance as to secure clear superposition. The arrangements, precautions, &c., are given in some detail.

Sensations of colour in one eye resulting from stimulation of the retina of the other eye by coloured light.[2]—In this paper the writer gives an interesting result arrived at in connection with his experiments on central fusion noticed immediately above (*Comptes Rendus*, 1891, xciii. p. 358). Using the stereoscope with glasses of complementary colours placed before the lenses (a device to avoid colouring the stereoscopic pictures themselves and giving the same results) he secured a white central image in relief flanked on each side by an image coloured like the glass on that side. Removing the glasses quickly he found that these side images exchanged colour—the ordinary after-result of colour stimulation. He then bandaged one eye and after looking into the stereoscope with the other eye, removed the coloured glasses and the bandage, and looked again with both eyes. The result was in all respects the same as before when both eyes had been open before the glasses were removed, *i.e.*, a white image in relief in the centre and coloured complementary images at the sides. This shows the presence in one eye of a coloured image due to the vision by the other eye of the complementary colour: a fact noticed by Fechner and explained by Helmholtz as a case of illusion coming under the head of simultaneous contrast. Chauveau holds, however, that this experiment proves that the image is a real sensation in the bandaged eye,

[1] Chauveau, *Sur la fusion des sensations chromatiques perçues isolement par chacun des deux yeux*, Comptes rend., 1891, cxiii., 358.

[2] Chauveau, *Sur les sensations chromatiques excitées dans l'un des deux yeux par la lumière colorée qui eclaire la retine de l'autre oeil*, Comptes rend,. 1891, cxiii., 394.

since the result is the same as when both eyes have been stimulated by the two complementary colours. In his view the result is brought about by "a reaction of the eye which is stimulated upon the perception-centres".

He supports this interpretation, farther, by an experiment which offers additional evidence of central fusion. If the left retina be fatigued by red light and then both eyes be directed into the stereoscope, the left image has a green cast and the right image a rose cast, while in relief between them appears again the pure white image, due to the fusion of red and green. Further variations of this fundamental experiment are also given. The whole is an important contribution to the main question of central fusion, and indirectly to the theory of central diffusion—"diffusion of sense impressions beyond the functional zone of the particular nerves excited" (p. 394)—to which M. Chauveau is giving more especial attention.

Antagonism of the Visual Fields.[1]—M. Chauveau here pursues the general question of interaction between the hemispheres by asking why it is that antagonism takes place between the two retinal fields. He describes this antagonism as "influence brought to bear upon the centre for one retina by stimulations to the other retina". Claiming that this influence is a central influence and not a matter of the actual stimulation of both retinas, he cites the experiments spoken of immediately above. In stereoscopic vision the two side images do not antagonise each other; only the inner half of each, which goes to form the central image, shows rhythm and variation. If the fact of antagonism were due to retinal (peripheral) stimulation, the entire side-images would show it and not merely the adjacent halves where superposition is broughr about. He also says that "since the connexions between the two retinas are established only by means of the central nervous system, we are compelled to hold that the antagonism of the visual fields is a central phenomenon". What then is the central mechanism of antagonism? We must suppose connexions between the optic centres, "connexions which bring identical points of the two retinas into communication with each other through the nuclei of origin of the optic nerves". In ordinary vision there is no apparent antagonism, since the two images are identical; but some rhythm is there even then. In the case of non-identical images there is an alternative and reciprocal *inhibition* which gives the resulting image its variable character. In the case of instantaneous illumination there is no time for this inhibition to change its direction, and the image appears fixed. By the same hypothesis he also explains Fechner's experiment, mentioned above. Chauveau's theory of binocular nervous inhibition suggests the facts of a similar kind cited by Binet under the head of psychic inhibition.[2]

Means of Studying Binocular Contrast.[3]—A somewhat detailed account of the arrangement, necessary apparatus, and best plane figures, for repeating Chauveau's experiments on binocular contrast. Examples of the stereoscopic figures are given.

[1] Chauveau, *Sur la theorie de l'antagonisme des champs visuels*, Comptes rend., 1891, cxiii., 409.

[2] *L'Inhibition dans les phénomènes de conscience*, Revue Philosophique, Aug., 1890.

[3] Chauveau, *Instrumentation pour l'executer des diverses experiences relatives a l'étude du contraste binoculaire*, Comptes rend., 1891, cxiii., 442.

Retardation of Luminous Impressions.[1]—The author observes that when a dark object passes quickly across a white background in the field of vision, bright red colour plays about the edges of the track obscured by the object. He attributes the presence of the red to the retardation of the luminous rays which re-illumine the darkened track—retardation which is least for the rays of greatest wave-length, *i.e.*, red. From an accidental experience of driving past a dark tree seen on a ground of white cloud, he calculates that the red precedes the full white illumination by about ·01 sec.

Retinal Oscillations.[2]—M. Charpentier finds at the beginning (début) of every light-stimulation to the retina evidence of certain oscillations of the retina itself. The negative phase of these oscillations is the more appreciable and manifests itself after about $\frac{1}{70}$ to $\frac{1}{58}$ sec. These oscillations propagate themselves outward in the retina from the point excited and give rise to alternate light and dark zones in the field of vision. He brings out these zones by an experiment by which he gets the persistent image of a small white object projected through the field of vision on a whirling disc.

The distance between these bands—say between two successive dark zones—enables him to measure "the *apparent* length of the undulation as it is modified by the displacement of the object," a case of *interference* to which Döppler's principle applies: according to which "this determination varies with the length of the undulation proceeding from a fixed object, the velocity of propagation on the retina, and the retinal velocity of the object". These determinations can be made by varying the velocity of the moving object.

He finds a case of the same negative-oscillation in the *double* sensation which follows an instantaneous or very brief light-stimulation—say a single spark from a Ruhmkorff coil through a Geissler's tube or in the air.

In another paper[3] M. Charpentier pursues the subject farther, making various exact determinations. He finds the distance between two successive "zones" about $\frac{1}{10}$: the velocity of propagation of the negative oscillation on the retina, a mean of 72^{mm}: frequency of oscillations, 36 a second: length of wave of retinal oscillation from fixed object, about 2^{mm}.

The author farther argues that the phenomenon is due to oscillations of the retina and not to "essential vibrations of the optic wave," since the results are the same for coloured objects. He connects the phenomena in an interesting way with entoptic vision.

Chromoscopic Analysis of White Light.[4]—The great importance of the researches of M. Charpentier on "retinal oscillations" becomes apparent in his attempt in this paper to derive support from them for his theory of colour-vision, announced some years since (*Comptes Rendues*, July 20, 1885). He holds that the sensation of colour results from the presence

[1] Mascart, *Sur le retard des impressions lumineuses*, Comptes rend., 1891, cxiii., 180.

[2] Charpentier, *Oscillations retiniennes*, Comptes rend., 1891, cxiii., 147. Cf. communication to *Société de Biologie*, Mai 10, 1890.

[3] Charpentier, *Relation entre les oscillations retiniennes et certains phenomenes entoptiques*, Comptes rend., 1891, cxiii., 217.

[4] Charpentier, *Analyse chromoscopique de la lumière blanche*, Comptes rend., 1891, cxiii., 278.

of "two simultaneous and harmonious retinal oscillations of different periods. One of the two waves undergoes a variable retardation which has a special value for each colour. In the case of two complementary colours the difference in retardation is half a wave length, which results in the extinction of one of the waves by interference." It is seen at once that the evidence brought by the experiments cited above for retinal oscillations and their subsumption under Döppler's principle, tends to supply the basis needed to this theory. It brings colour perception into close analogy with sound perception—the spectrum with the gamut —and explains colour vision on the general theory of the physics of the summation and interference of undulations. The wave movement gets carried over from the medium into the organ of vision.

In this paper the author presents another phenomenon in support of his theory, *i.e.*, that "luminous excitations of a limited portion of the retina, *made by white light*, appear very clearly coloured . . . provided the stimulation be instantaneous and of very feeble intensity". The experiments by which he demonstrates this are given in some detail. He holds that it can not be due to the simple fatigue which gives coloured vision under successive stimulations, for the conditions are different in many details. It can not be explained by any theory which holds that colour vision is due to the stimulation of special nervous elements, each vibrating to a separate colour (Halmgren, Helmholtz), because it holds when a portion of the retina (6mm. in diameter) is stimulated containing numbers of rods and cones: the "colour remains uniform throughout the whole extent," although in different experiments this colour may itself vary. The author explains the phenomenon by the supposition that the retina is constantly run over by oscillations varying in its different parts; the new stimulation comes to be added to one of these, and, if not too intense, gives the appropriate colour, but only for an indefinitely short period, for all the other oscillations by which the retina is agitated come also into play at the point in question, and by their mutual interferences give white light. The author propounds this only as an *ebauche de theorie*, but it is interesting and important enough to attract the attention of the disciples of Helmholtz and Hering.

JAMES MARK BALDWIN.

ARISTOTELIAN SOCIETY.—The Thirteenth Session was opened on 2nd November with the usual Presidential address. Mr. Shadworth H. Hodgson took for his subject "Matter". On 16th November the meeting was held at Jesus College, Oxford—Mr. S. Alexander, V.P., in the chair. The subject was a Symposium on "The Origin of the Perception of an External World" by the President and Messrs. B. Bosanquet and D. G. Ritchie. On 30th November Mr. Arthur Boutwood read a paper on "Dr. Croll's Philosophical Basis of Evolution". The following new members have been elected: Mr. A. M. Daniell, B.A., Miss Millington-Lathbury, Mr. Charles J. Shebbeare and Dr. James Ward.

INTERNATIONAL CONGRESS OF EXPERIMENTAL PSYCHOLOGY. — The Honorary Secretaries have sent us the following "Provisional Programme: "The Second Session of the above Congress will be held in London, on Tuesday, 2nd, August 1892, and the three following days, under the presidency of Prof. H. Sidgwick. Arrangements have already been made by which the main branches of contemporary Psychological research will be represented. In addition to the chief lines of investigation comprising the general experimental study of psychical phenomena in the normal human mind, it is intended to bring into prominence such kindred departments of research as the neurological consideration of the

cerebral conditions of mental processes; the study of the lower forms of mind in the infant, in the lower races of mankind, and in animals, together with the connected laws of heredity; also the pathology of mind and criminology. Certain aspects of recent hypnotic research will also be discussed, and reports will be given in of the results of the census of hallucinations which it was decided to carry out at the first Session of the Congress (Paris, 1889). Among those who have already promised to take part in the proceedings of the Congress may be named the following: Professor Beaunis, Monsieur A. Binet, Professor Pierre Janet, Professor Th. Ribot, and Professor Richet (France); Professor Lombroso (Italy); Dr. Goldscheider, Dr. Hugo Münsterberg, Professor G. E. Müller, Professor W. Preyer, and Dr. Baron von Schrenk-Notzing (Germany); Professor Alfred Lehmann (Denmark); Professor N. Grote and Professor N. Lange (Russia); Dr. Donaldson, Professor W. James, and Professor Stanley Hall (United States of America); and Professor V. Horsley, Dr. Ch. Mercier, and Dr. G. J. Romanes (England). It is also hoped that Dr. A. Bain, Professor E. Hering, and others, may be able to take part in the proceedings; and that some, as Professor W. Wundt, who will not be able to attend the Congress, may send papers. As a specimen of the work that will be done, it may be said that Professor Beaunis will deal with 'Psychological Questioning' (Des questionnaires psychologiques); Monsieur Binet, with some aspect of 'The Psychology of Insects'; Dr. Donaldson, with 'Laura Bridgman'; Professor Stanley Hall, with 'Recent Researches in the Psychology of the Skin'; Professor Horsley, with 'The Degree of Localisation of Movements and Correlative Sensations'; Professor Pierre Janet, with 'Loss of Volitional Power (*l'aboulie*)'; Professor N. Lange, with 'Some Experiments and Theories concerning the Association of Ideas'; Professor Lombroso, with 'The Sensibility of Women, Normal, Insane, and Criminal'; Dr. Münsterberg, with 'Complex Feelings of Pleasure and Pain'; and Professor Richet, with 'The Future of Psychology'. A Committee of Reception has been formed, which includes, among others, the following names: Dr. A. Bain, Dr. D. Ferrier, Mr. F. Galton, Dr. Shadworth Hodgson, Professor V. Horsley, Dr. Hughlings Jackson, Dr. Chas. Mercier, Professor Croom Robertson, Dr. G. J. Romanes, Mr. Herbert Spencer, Mr. G. F. Stout, Dr. J. Ward, and Dr. de Watteville. The fee for attendance at the Congress is ten shillings. Arrangements will be made for the accommodation of foreign Members of the Congress at a moderate expense. Communications are invited, which should be sent to one of the undersigned Honorary Secretaries not later than the end of June, and as much earlier than that date as possible. The communication should be accompanied by a *précis* of its contents for the use of Members.—F. W. H. Myers, Leckhampton House, Cambridge; James Sully, East Heath Road, Hampstead, London, N.W."

We have received notice of a new periodical: *The Philosophical Review*, edited by Professor Schurman of Cornell University. The publishers are Messrs. Ginn & Co. (Boston, New York, Chicago, and London). The Review will be issued once in two months, beginning on January 1, 1892. It will contain, "besides original articles, prompt and trustworthy accounts, and estimates of the literature of Philosophy, which will include, not only reviews of books, but condensed summaries of articles appearing in magazines, journals, newspapers," &c. These summaries, instead of being thrown together in the order of original publication, will be classified under the heads: Logic, Psychology, Ethics, Metaphysics, &c., so that a reader interested in any special branch of Philosophy will have regularly presented to him a systematic account of the work done in his specialty throughout the civilised world.

New Series. No. 2.] [April, 1892.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

I.—PLEASURE AND PAIN.

By A. Bain.

The exhaustive discussion of Pleasure and Pain, in a general thesis, needs an ample reference to the examples in detail as furnished, in the first instance, under Sensation. These examples are sufficiently numerous in themselves to supply a test of any theory, while they have the advantage of calling attention to unquestionably primary modes. The psychical characters can be so far generalised, and, in connexion with the generalities, the question may be put, whether there be anything corresponding in the known physical adjuncts. It is also possible to theorise upon psychical circumstances purely, as in the discussion of certain special instances by Ward and Bradley.

In taking into account the Emotions, there are modes of primitive feeling no less than in the Senses; there being at the same time a wide compass of the non-primitive modes.

Pleasure, in itself, is of course indefinable; but individuals and species may be enumerated. In this enumeration may be constituted representative groups, on which to base a theoretical treatment. Even supposing physical concomitance were left out of account, the generalised characters

would still be considerable and important, as for example in the distinction of massive and acute.

The discussion raised by theorists upon the pleasurable sensibility of the state of drowsiness points to a mode of action of the system that may have a wider range of exemplification. Take the case of cessation of pains generally, and remark that, in some instances at least, there is a notable reaction or recoil of pleasurable feeling. To pass from a glare of light into the shade is not merely cessation of pain, there is also a distinct thrill of grateful feeling. So, to get out of hubbub into stillness is something more than mere cessation of auditory pain, or, to say the least of it, it is something different. We must, however, take account of the continuance of pain in the idea after it has ceased in fact. The higher the pain is in the scale of intellectual retentiveness, the greater would be this persistence, and the greater the interference with the mental repose. It is in the case of the acute physical pains, as toothache, that, the persistent memory being feeble, the grateful reaction is most apparent The question then arises, does the system provide for a pleasurable condition which is the consequence of remitting such forms of pain as die away from the memory, when no longer stimulated by their external causes? If there were such a law, the pleasure of going to sleep, as the cessation of conscious activity of any kind and of muscular activity in particular, would be a marked exemplification. That there are forms of remission of activity, whether painful or not, that manifest this reaction only in a slight degree, might affect the generality of the proposition, but would not do away with it. There would thus emerge the class of cases already cited, where the principle is an operating circumstance in human pleasure.

Another way of looking at the same phenomenon is, to take the aspect of congratulation or rejoicing over an escape or a deliverance from some great evil. This position would be strengthened, if not created, by our having made up our minds for a time that the evil was to prove more lasting than it actually turns out to have been. Such a state of itself would seem to be necessarily agreeable, in common with sudden access of good fortune generally. It removes the case from the situation first assumed, namely, simple cessation of pain, unaccompanied with reflexion, calculation, expectation, or dread, and does not therefore give any insight into that situation. It belongs rather to the wide department of pleasure and pain in their ideal modes, or as contemplated in advance or else in retrospect. An extreme

instance would be furnished by the exultation of victory, which is a great deal more than the cessation of the strain of fighting and the sense of danger.

The designation "Relativity" covers a wide field more or less allied to the situations now reviewed. As applied to the example of light and shade, it would signify that the gratefulness of shade presupposed a certain continuance of glare, without which it could not exist; just as the pleasure of warmth supposes a certain previous chillness. The nice point to consider here is, whether the previous condition must be exaggerated to the pitch of pain, in order that the recoil may be agreeable. This would be decisive of the problem. Does nature give a pleasure of relief or recoil after exertion or exercise, although not pushed to the point of pain? For if this were so, then the pleasure of muscular repose or drowsiness would be a positive institution, an addition to the sum of pleasure, without the cost of previous pain. No doubt the presence of a certain amount of pain heightens the relish for the change, yet this needs to depend upon a distinct law of the system and is not obviously a consequence of the other. We might hypothetically conceive of it as contributing to the physical stimulation that underlies the very fact of change, or the remission of one exercise to assume something opposite or different.

We have to take along with us the circumstance that all the organs associated with pleasure, and often exercised in that way, assume periodical conditions of craving, which it is painful to deny or refuse. Such is the pain of being immured in the dark, as contrasted with the pleasure of darkness following on glare. Probably the eye is the extreme instance of this craving; there being reason to suppose that the stimulus of light contributes directly or indirectly to the healthy organic functions. It may not be the same with hearing, except that the ear is the medium of sociability, for which there is a natural recurrent craving.

What is peculiar to Relativity is partly, but not wholly, included in the general law that every organ needs exercise, or at all events relishes such, in proportion to its active endowment. This is adequately expressed by the law of rotation, or change, from which we can draw numerous corollaries and find the most abundant exemplifications in every region of our sensibility. The corollary that comes closest to Relativity is that, in proportion to privation, or length of interval of gratification, is the intensity of the pleasure when it arrives. This principle in appearance covers our initial instances of drowsiness and the like, but

only on the surface ; for it would have first to be established that these are independent sources of pleasurable sensibility.

The indirect operation of pain in contributing to pleasure has to be exhausted in those more simple aspects, before grappling with its wider developments as seen under the higher emotions and the intellect. Even the most elementary of these higher situations, the pungency of a slight shock of fear, may not be altogether organic, although, if partly so, it would exemplify a natural tendency that might cover some of the problematic instances formerly adduced. Yet nothing would seem to enable us to dispense with the necessity or propriety of viewing every species of pleasure or pain on its own merits, after which generalities of greater or less range might be suggested.

In our farther search for such generalities, we may begin with a review of the Sensations, as recognised in their proper hedonic capacity. It is impossible, even at the outset, to refuse the guidance of certain hypothetical considerations that have been adduced with reference both to Sensation and to other modes of Pleasure and Pain. For example, the dependence of Pleasure upon harmony and Pain upon discord, conflict, or opposing tension, would seem to require, as an assumption, that perfectly elementary sensibilities, those into which even our usual sensations may be analysed, give birth to little or no pleasure. Against this hypothesis is another, proceeding upon the fact that Sensation, as such, is pleasant, while susceptible of increase or diminution from a variety of incidents.

Let us take as a commencement the sense of Hearing. According to Helmholtz, sweetness in sound is the consequence of a peculiar arrangement of upper tones, being in fact a case of harmony. As put by Tyndall, a perfectly simple sound, unaccompanied by upper tones, is insipid. This is a remarkable admission. It militates against our supposing Sensation as such to be pleasurable, and this without reference to intensity, except perhaps in the extreme forms of acuteness. The insipidity alleged would not exclude the slight beginnings of pleasure, which might become a perceptible quantity in reference to prior stillness, prior discord, painful acuteness, or great freshness of the organs.

The case now stated is in some degree illustrated by the other mechanical sense—Touch. Bare touch in its least complicated form may receive Tyndall's epithet of insipid ; while there is nothing to constitute the equivalent of harmonic upper tones. Warmth or coolness is a superadded

element; the only favourable situation for touch in its purity is voluminous softness.

The case of Sight may next be studied. Mere light is undoubtedly a positive pleasure of considerable amount, and is not to be treated as coming under the stigma of being insipid. The only condition for maximising the pleasure is a due regard to Relativity, as remission, alternation, variation, and regulation of intensity. It is known, however, that light is a compound agent; we are acquainted with its constituents, *viz.*, the colours of the spectrum, and we can test these individually as pleasurable or painful agencies. In appropriate circumstances, we may derive pleasure from any one of the colours or shades of colour, while their combination in particular ways is still more markedly agreeable. The theory of this effect is burdened with serious difficulties. First of all, referring to the simple shades and gradations of colour, some are accounted especially rich in their operation on the eye, a richness that might partly depend on brilliancy, but is not fully accounted for in that way. Associations, some perhaps hereditary, may come into play, but their sources are at present obscure.

The discussion of Taste and Smell somewhat varies the illustration, while the two senses are almost on a parallel in what they suggest. It is here that the difficulties of the hypothesis of the intrinsic pleasure of Sensation are at the maximum. Accordingly the resort is to an extreme hypothesis to bring about a reconciliation. At first blush, we are confronted with certain appearances such as we may interpret in the following fashion.

The case of Smell is perhaps at once the most simple and the most suggestive. The generalisation that connects sweet odours with the hydrocarbons, and malodours with compounds containing nitrogen and sulphur, would appear to point to a primitive and inerasable difference in nervous susceptibility, of a kind that cannot be explained away by either varying intensity or associated effects. We seem at once driven upon the hypothesis that a certain class of chemical agents impart to the nervous substance the atomic modification that is the sign and adjunct of pleasurable feeling; and so with the production of pain. These effects also appear to begin and end in themselves; they have little or no bearing upon the well-being or ill-being of the system generally. They thus typify to us one of the characteristic sources of our pleasurable and painful sensibility.

Referring now to the sense of Taste, we shall find a certain amount of agreement with the foregoing hypothesis.

The sweet and bitter tastes may in all probability be referred to fundamental differences of chemical agency; assuming these to be of the simplest or most elementary kind, as in the contrast between sugar and bitter aloes. When tastes become more complicated, we see the play of opposites, with the effect of mutual conflict and the right of the stronger. As regards food, we have the additional circumstance of relish, which, however, finds its best elucidation when taken along with the feelings of digestion.

The vast array of Organic Sensations necessarily involves a wide range of examples illustrative of the causes of pleasure and pain. It is most convenient, and may prove in the end most suggestive, to attack these by selection rather than by systematic review.

The example of alcoholic stimulation is favourable as a hypothetical study. Upon the common basis of alcohol, in its absolute character, there is an endless variety of modifying compounds, and the substances that enter into their composition are, to a certain extent, known and understood. Looking to the effect of alcohol by itself, we may form some hypothetical assumption as to its mode of working; that is to say, we may take note on the one hand of the subjective fact of mental elation, and on the other of the chemical agency of alcohol as a solvent of some constituent of the nervous tissue: and, however vague this hypothesis may be, we, at least, see no ground for considering it as otherwise than a primordial and independent physical influence. Of course, we are empirically aware, that this is one of the cases where the nervous system is awakened to a pleasurable response, while at the same time it is speedily brought into a state of exhaustion, with debility of function and neural pain.

This general supposition is instructively qualified by what we know of the concrete alcoholic bodies. We know, for example, that some of them are especially mischievous, and that the mischief is due to the presence of impure ingredients that especially grate upon the nerve substance. These are found in coarse and inferior types of the alcoholic beverages; and it is the object of the manufacturer to arrest or remove such agents, while the effect of long keeping is to bring about their decomposition. On the other hand, it seems to be determined, chemically, that the choice and delicate flavour of the most precious varieties of wines and spirits are due to certain ethers that are evolved in company with alcohol proper. The case of malt whisky illustrates both circumstances. The removal of fusel oil is the essential

purification, and the presence of certain recognised ethers is the source of the characteristic flavour of the spirit. Now, when we take into account the extraordinary difference to the sense, and to the limits of endurance without nervous mischief, between alcohol in its plainer forms and alcohol in the delicate spirits and wines, we have an example of pleasure produced by complex harmony not improperly comparable to the effect of sweetness in sound by the presence of upper tones. Possibly these accessory ethers admit of being both felicitously and infelicitously grouped or aggregated. At all events, they induce a wide deviation from the subjective results of alcohol *per se*. The example, taken as a whole, is no doubt representative; it has parallels, at least, in the other members of the class of nerve stimulants—tea, coffee, tobacco, and the rest; while, out of this region altogether, the principle of action exemplified may be presumed to hold.

For the next selection we may refer to organic sensibilities where the mode of operation is more or less mechanical, and in consequence easily understood. Take, then, the case of simple injury of a sensitive tissue by cutting, tearing, squeezing, or mechanical violence generally. A certain injury is done in the first instance to a sensory surface, say the skin; the nerve fibres distributed to the surface, are either injured themselves or receive a shock from the injured part of the sensory surface. It is clear, however, that they cannot escape disorganisation on their own account. Here we have a study of pain in a very intelligible situation. It supplies us with the inference that, in order to exemption from suffering, the material of the nerves must be whole and intact, that its disruption or violent compression is at once a cause of acute suffering, to which pathology adds the farther injury of inflammatory change. Probably, in all the more violent forms of painful malady, mechanical or chemical injury or derangement of the nerve tissue is implicated; it being a moot point how far the painful derangements of sensitive organs are operative by inducing a specific derangement of nerve substance, or simply by inducing an unfavourable type of nerve current; both suppositions are admissible.

The study of mechanical effects on the nerve material may be made to include the operation of Heat and Cold as sources of sensibility. Either of the two agencies, in the extreme, is productive of disorganisation of tissue, and closely resembles, both physically and mentally, the case of mechanical hurt. The novel point of interest here is to

take note of the milder applications of thermal agency, in which are included some of our most habitual pleasures.

The variations of temperature, within the limits of endurance, include a considerable range of both comfortable and uncomfortable sensations, the amount being very considerable whether taken as acute or as massive. Simple increase of temperature might be regarded as one of the most conceivable types of nervous stimulation, being, in this respect, at an advantage as compared with chemical agents. Still the attempt to formulate the precise physical influence of a slight increase or decrease of warmth on the surface of the skin, with a view to a theory of pleasure and pain, cannot at present go very far. It is one of the cases where a small stimulus can give pleasure, as in the increase of warmth under certain circumstances, while a limit is very soon reached where the pleasure passes into pain. This is merely one among other examples of a wide-ranging law of our sensibility. More pointed and specific are the two following observations.

In the first place, it is under this agency that we have perhaps the best illustration of the law of Relativity in its most decided and intelligible form. The transition from one degree of temperature to another is an essential condition of the sensation of heat or cold. Moreover, the fact of pleasure, or of pain, is equally a matter of correlation. A degree of the thermometer that in one circumstance gives pleasure, in another gives pain; and this is true of the agency in itself, or without reference to any other agency that may be operative at the time. The examples of this purest type of Relativity are not numerous in the human system. They are found in connexion with the muscles, but only in a moderate degree with the five special senses.

The second observation is this: Although heat and cold are essentially bound up with bodily health and well-being, and although there is a frequent coincidence between their pleasurable modes and physical well-being, and the opposite with pains, yet the concurrence of the two facts does not hold throughout; so that we cannot treat this sensibility under any general law of conservation. It is notorious that the pleasure of warmth subsists at degrees of temperature that are unwholesome and debilitating; and that the pain of cold goes frequently along with a temperature that is positively invigorating. Indeed, as far as the health of the body is concerned, a certain pitch of coolness, such as to tax endurance, is the most favourable to bodily vigour.

The sensation of agreeable warmth is so far *sui generis*

that it is not mistaken for any other; but just as the extreme hurtful applications of temperature resemble in psychical tone the wounds and acute injuries of the inflammatory type, so the milder forms of warmth have something in common with vague sensations of several other organs when under their healthy manifestations. In the scale of vagueness, it ranks next to mere nervous elevation, as in the gentle warmth of air or water at blood heat.

The pleasurable results of variation of temperature are little experienced in tropical regions or in the warm summers of the temperate zone. The law of Relativity does not, as Plato supposed, make our pleasures and pains exactly equal; even in the winter of temperate and cold climates there may be a very large amount of pleasurable warmth, while the pains of cold may be few and distant.

The Muscular System. The pleasurable and painful feelings connected with the muscles, to which allusion has already been made, while co-operating in some points with the views already expressed, are suggestive and illustrative of other important generalities bearing on the present theme. They put before us, in a palpable shape, the law of exercise of function as a cause of pleasure, due regard being paid to the limits of strength; while pain is the consequence of trespassing those limits.

It is difficult to fix the character of the muscular sensibility under exertion so as to give it in typical purity; there are usually accompanying modes of sensibility often more acute than the simple feeling of muscle. Nevertheless, it is not impossible to satisfy ourselves as to the precise nature and possible amount of pleasure attainable under muscular exercise by itself in certain given circumstances. But what concerns us here is to detect the conditions of a general kind that bring the case into comparison with other sensibilities. For one thing we have already remarked, that the pleasure of cessation, or repose, after exercise, is a fact empirically ascertained and not apparently due to any necessity or implication of the pleasure of activity. Probably in no other part of the system is there such a marked example of a large volume of gratification arising from mere cessation of active function. The chemistry of muscular recuperation and nutrition is partly known and may be suggestive; but it is scarcely paralleled by illustrative comparison with the other organs whose exercise develops sensibility.

Muscular exhaustion and inaction can be studied in one very important collateral or consequence; *viz.*, the inducing of sleep, to which perfect muscular quiescence is essential.

So important is this part of the case, that sleep can be caused or hastened, out of its natural time or routine, by unusual muscular expenditure followed by the repose of exhaustion. Hence the ordinary feeling of drowsiness has much in common with rest after muscular fatigue, and may accordingly be viewed as in a measure made up of muscular sensibility under total remission of active exertion. It seems hopeless to treat this pleasure as a compound of any known simples. We may rather accept it as a distinct organic effect annexed more especially to our muscular system, and partly statable in terms of chemical and physiological processes, from which we may draw whatever inference we may see fit.

The grateful feeling of muscular exercise admits of being given either as a simple quality attaching to the muscular system, or as one of our Appetites, which is the same fact in its bearing on the Will. We are said to have an appetite or craving for action, the motive being in the first instance the pain of inaction. After an interval of repose and refreshment, the active system is, as it were, wound up to expend its energy, and for us to be restrained is to undergo a certain amount of suffering. The consequence is, that the pain acts as a voluntary motive to put forth exertion; while, as in other appetites, the pleasure of the exercise is a farther motive to continue the state until the craving is fully satisfied. If, in consequence of extraneous motives, that is, the urgency of some work to be done, the exertion is still farther prolonged, the pain of fatigue comes on and constitutes a new motive or craving for cessation or repose. To all this there applies the remark made with reference to heat and cold; *viz.*, that the course of our muscular sensibility promotes, in a general way, the health of the system, but not to its whole extent. The sense of fatigue, with its urgency to cessation of exercise, springs up before the full benefit has been attained in the way of healthy stimulus. Muscularity is therefore another testimony to the insufficiency of Sensation as a guide to health and self-conservation.

The pains specific to muscle are notable and unique. There may be many varieties of suffering, some common to the tissues generally, but the pain by pre-eminence is that expressed by cramp or spasm, and is one of the worst ills that flesh is heir to. Arising from a conflict of tension in the muscular fibres, it may be said to be typical of one wide-ranging generality of pain, the pain of opposition, contradiction, or collision of hostile promptings. It is, however, too simple and elementary to throw light upon

the higher complications coming under this head; it may be more properly regarded as a simple incident or ultimate fact of our muscular system. The physiological fact is tolerably well known, and the subjective experience is also known. We have many kinds of physical pain, but this has a peculiarity of its own, and could not be understood through any of the others. As a nervous phenomenon, we can simply say that when a muscular fibre is violently contracted by a morbid excess of motor stimulus, while at the same time something checks its contraction, the sensitive fibres of the muscle undergo a violent irritation in the mode that is specifically painful. Of course there is a certain salutary efficacy in the stimulus, as doubtless the occasion is a morbid phenomenon that cannot be too soon ended; yet here too we may say that there is no obvious proportion between the pain and the derangement to be rectified; a smaller amount of suffering would probably induce us to do whatever can be done to set matters right. In point of fact, there may be an equal, but certainly not a greater, pitch of suffering in any other seat of sensibility. The cramp stage in Asiatic cholera, affecting both involuntary and voluntary muscles, could not be surpassed by any known variety of torture.

Organs of Digestion. In this region also we have a large volume of sensibility, pleasurable and painful, with specific characters that are well marked, and exercising a powerful influence upon the mind. The feelings associated with digestion include some of the so-called Appetites, being periodic cravings whose gratification belongs to the maintenance of the human system. The supply of nutritive matter to the blood as the medium of regeneration of the various tissues takes place through the stomach, which must first prepare the food-material for its destination. In so doing, the stomach with its appendages acquires interests of its own, and has a set of feelings peculiar to itself. While the health of the system simply requires that there should always be nutritive matter in the blood, including also the removal of what is effete, the stomach settles its own times of receiving food and of going through its various stages of manipulation. In all this, it manifests an extraordinary intimacy with the brain in respect of massive sensation, agreeable or the opposite. As a guide in the conduct and economy of life, it has the same merits and defects as warmth and muscularity; it keeps us in the proper track of self-conservation for a certain length, and then deserts us. In other respects, the chemistry and physiology of digestion

offer but a very limited insight into the kinds of nervous stimulation that are accompanied by pleasure and pain. The characteristic form of pain, *viz.*, sickness and nausea, is the extreme manifestation of stomachic disturbance, of which ordinary hunger may be an incipient stage, although perhaps also allied to the *ultima ratio* of alimentary cramp. The appetising force of our digestive states is the antithesis to all these extremes ; whence we rise up to the genial feeling of healthy digestion, with its commanding influence over the entire mental tone.

Respiratory Feelings. The function of Respiration, whose organ is the lungs, is to supply our aerial food in the shape of oxygen, and to remove the principal aerial impurity—carbonic acid. A bellows-like action is sustained for this purpose by the operation of a group of muscles operating without intermission through certain known nervous centres. In ordinary circumstances, little or no sensibility belongs to the process, the reason being its unbroken continuance. It is one of the best examples of the law of Relativity, that is, the necessity of change as a condition of consciousness.

As with the organs last discussed, the speciality of respiratory feeling, when it does arise, is its extreme form of pain, known as suffocation. The endeavour to restrain the action of breathing is attended with a distressing sensation that becomes at last insupportable. As a pain of conflict, it resembles the muscular pains of spasm, and in fact contains a muscular element, although this is not the whole. There is a complex sensibility arising from the refusal to supply oxygen to the lungs and remove carbonic acid. At the same time, the pain would seem to be in advance of our positive wants in these respects. Notwithstanding the urgency of the respiratory interest, many facts show that, for an interval of several minutes, the exchange of gases in the lungs may be suspended without fatal consequences. It would seem, therefore, that the interference with the established rhythm of the breathing function is the more immediate cause of the painful conflict ; the resistance to the nervous discharge from the respiratory centres inducing the painful sensation of conflict, muscular and nervous. As in other cases, the precaution is in advance of the danger, if not excessive in degree ; that is to say, a smaller pain might possibly keep us aware of the needs of respiration.

This last remark would appear to be still more applicable to the special respiratory outbursts—coughing and sneezing. These are produced by painful irritations of surfaces that need to be kept free from foreign bodies and irritating agents.

The respiratory spasm operates as a remedy; but, so far as appears, it is greatly overdone, being often prompted in disease when there is nothing tangible to get rid of.

The pleasurable feelings connected with respiration are not in themselves pronounced, owing doubtless to the working of relativity, which requires a change or deviation from even persistence in order to make us conscious. The fluctuations of pure and impure air have their effect; the one leading to a general exhilaration, the other to the opposite extreme, and tending at last to a form of suffocation. The pleasurable side of the case belongs to that wide department of pleasure connected with any notable advancement in healthy functions, an effect that in the end must show itself in raising the normal condition of the nervous substance, both nerves and centres. The same hypothetical rendering is applicable to the obverse view, or to the pain and depression due to deficiency in the exchange of gases in the lungs. The influence of poisonous ingredients would naturally have the same interpretation, but, here, as in other cases, we make a distinction between agents that interfere with respiration without the warning of pain, and others that cause irritation while not necessarily mischievous. Whether chlorine and sulphurous acid are injurious to the lungs in proportion to their irritative quality, I am unable to say; but carbonic acid, carbonic oxide, and carbonated hydrogen (perfectly pure, which coal gas is not), are all speedily fatal without the warning of pain.

Electricity. As a physical agent, electricity is tolerably well understood. It is, at least, as intelligible as heat, or chemical action. Some help may, therefore, be derived in framing a hypothesis of the physical side of our simple pleasures and pains, by remarking the various subjective consequences of electrical shocks and currents. Hardly any of these can be quoted on the side of pleasure; they are mostly indifferent or else painful, the transition from indifference to pain being mainly a change of intensity. A simple shock from a Leyden jar is something of the nature of a stunning blow; while the sparks from the machine upon the knuckle are of the nature of a smart prick. A sustained voltaic current makes a sensation of heat, and is felt along the track of the nerves to the brain. The most rousing of all the electrical influences is the Faradaic current of the magneto-electric machine, which is known to be an incessant making and breaking of contact, with reversal of current at each turn. In small quantities, this is tolerable, and even considered as a wholesome stimulant or remedy in certain ailments. In

higher degrees, it amounts to intense agony, proving that its mode of action on the nerves is of the most unfavourable kind. After the mental state reaches the point of the unendurable, it is just possible that its continuance would be a destructive disorganisation of the nervous tissue. If this were not the case, or if the pain were out of proportion to the injury caused to the nerves, this would be the most efficient and least objectionable of modes of using corporeal pains as a moral discipline.

The Nervous System. In making the nervous system, in its own proper nature, a study, we have to draw a distinction between the changes in its working caused by the various sensitive organs operating as stimuli and those changes due to its own state of nutrition, or integrity, or the reverse. The line thus drawn is not easy to observe at all points ; nevertheless, it is sufficiently well known that the brain and nerves, as a whole, are liable to fluctuations in their sound or unsound condition, and that well-marked subjective consequences attend these fluctuations. The supply of blood, in proper quality and amount, is a part of the necessary requirements ; and as this changes so does the nervous efficiency for all leading mental functions.

While the phases of brain efficiency, grounded on independent variations in its substance, are numerous beyond reckoning, it is both safe and sufficient to indicate a few leading and well-recognised modes of alteration.

First. We can suppose an ideal perfection of the healthy constitution of the nerve substance in its own proper character, and can fairly conclude that the subjective accompaniment is a high degree of mental efficiency—in other words, a vigorous response to whatever prompting may be uppermost. This by no means decides what the outcome will be ; we must accept as a fact that different brains, in an equal state of efficiency, differ in the modes of healthy exertion favoured by them. The emotional tone, or feeling of hilarious existence, will always gain more or less in the situation supposed. As a matter of course, the aid furnished by the prime condition of the various organic functions is so far contributory to the high nervous condition.

Second. The foregoing assumption implies, as its obverse or opposite, a deficiency or depression in the integrity of the nervous substance, with a corresponding loss of mental working power in whole or in part.

Third. The innumerable disorders that affect the nervous system, while not necessarily affecting its general efficiency, bring about such changes of tissue as are usually the har-

bingers of pain. The so-called neuralgic affections, involving inflammatory or other changes in the substance, are illustrative of the modes of nervous alteration that give rise to acute painful sensibility. Against these we must set off other changes damaging to the substance, as shown by the issue, but not productive of immediate pain. We are therefore prevented from believing that the many kinds of acute suffering assignable to nerve ailments are really protective in the degree of their urgency.

Fourth. As with the muscular system, the instrument of the brain's activity, there are pleasures and pains of exercise and rest, so with the brain itself, but with some important differences. We may hypothetically assign part of the pleasure of healthy exertion to the nervous centres in their own separate character; and, in like manner, we may suppose that nervous over-fatigue gives rise to pain on its own account, whether massive or acute. What seems peculiar to the exhaustion of the nerves is the occurrence of a point where cessation does not give the immediate feeling of repose. Indeed we can hardly trace, in connexion with the nerves, that luxurious and spontaneous feeling of rest that distinguishes the muscular system; we are more familiar with the morbid continuance of thought-activity, which is as oppressive as the over-exertion that brings it about.

Fifth. In certain forms of excitement, connected with pleasurable indulgences to excess, there occurs the feeling of fatigue or exhaustion, which should be accepted as Nature's hint to discontinue the stimulation, but, being neglected, often leads to a revival of the tone of enjoyment. A very probable explanation is to the effect, that the circulation in the brain has been unduly increased, and is of the kind that favours the exaltation of pleasure; the debt to Nature being paid by subsequent prolongation of the period of recuperative rest.

Anæsthetics. The physical causes of pain, as growing out of our elementary sensibilities, should naturally receive elucidation from the study of the different anæsthetics. In point of fact, however, the inferences drawn from these do not assist us in the study of the special modes of pain. What is effected by them is summed up in the suspension of Consciousness as a whole, whatever may have been its pre-occupation—pain, pleasure, thinking, will. Consequently, the action of the anæsthetic drugs, if we could fathom it, would be a contribution to our acquaintance with the physical conditions of consciousness in general. On that view of consciousness that regards the muscular response

as the essential complement of every mental situation, the theory of anæsthetics would involve some means of interfering with the muscular promptings. Lastly, the influence of persistence and habituation, in modifying both pains and pleasures, has a like general bearing, and does little to assist us in giving reasons for the differences between the two classes.

Tickling. The peculiar sensation of tickling is one of the anomalies that obstruct our endeavours to arrive at general laws of pleasure and pain. The slightness of the contact, as contrasted with the intolerable discomfort, is singular and as yet inexplicable. Some part of the effect may be due to the spasmodic reflex actions, which the will cannot control ; but that merely shifts the difficulty, while it can scarcely be looked upon as the whole case.

Summing up for Simple Feelings. Before passing to the complications of pleasurable and painful sensibility, or those cases where concurrence of a plurality of stimulants is an essential circumstance, we may at once endeavour to sum up the conclusions obtainable from the foregoing survey

The results are apparent from the nature of the running commentary passed upon the individual cases. They are negative rather than positive.

First. One general consideration has much in its favour, namely, that extreme violence or intensity of nervous stimulation, as measured by destruction or mutilation of tissue, whether of the sense surface or the nerves, is usually attended with pain. This evidently holds in a large proportion of instances. It is, however, subject to important qualifications or anomalies, such as beset the whole speculation that we are engaged in. For one thing, destruction or disorganisation of a palpable kind may overtake the sense organs, as well as the nervous substance, without any pain. In the second place, many acute pains attend upon derangements so slight as to have no serious effect upon our general well-being.

Second. There is a considerable amount of coincidence between pleasure and the nourishment and vitality of the system, through the supply of nutrition and the removal of waste, with the obverse effect of pain in the contrasting situation. The principal examples of this concurrence need not be repeated.

Third. There is pleasure in the exertion of all the active faculties—muscles, senses, brain—with a painful feeling of fatigue to determine the limit of active competence. The test thus supplied is not perfectly accurate for its purpose,

giving a premature indication which has to be disregarded if we would obtain the full measure of our capability.

Fourth. The pleasure attached to rest and remission after fatigue is somewhat various; being most conspicuous in regard to the muscles, while wanting in the senses and the nerves, or attainable only by careful limitation of the proper degree of exhaustion.

Fifth. The infelicitous arrangement whereby acute pains attend nervous disorders that are indifferent as regards the general well-being of the system, is qualified by the important fact that we have many acute nervous pleasures beginning and ending in the brain itself and neither exalting nor depressing the organic functions that are the support of life. This remark will be found especially applicable to the compound forms of pleasure. A certain number, indeed, of these acute pleasures have the known effect of exhausting by overstimulation the nervous vigour.

The pleasures and pains that pass beyond the stage of simplicity, and owe their character to the fact of union or combination, are by far the largest number of our pleasurable and painful experiences. The circumstance of plurality and combination assumes two obvious forms, namely, harmony and conflict.

The study of actual sensations has to be supplemented by study of the memory or the Ideas of them. The bearing of this new modification is all-important and wide-ranging, and contributes its share to elucidate the laws that we are in quest of. The conditions of harmony and conflict enter abundantly into the field of Ideas.

Different Aspects of Harmony and Conflict. Here we must draw a broad line between two very different classes of mental facts that receive the present couple of designations. In the every-day pursuits of actual life, we may have our aims, expectations, and pursuits either aided, realised, and fulfilled, or else thwarted and baffled. The one case is attended with pleasure, the other with pain. The names harmony and conflict, however, are not the only, nor the best, modes of describing the two respective situations. We wish a thing, and endeavour to attain it, because it would give us satisfaction. To be aided and furthered in the pursuit is so much gratification already secured; to be opposed, contradicted, thwarted, is simply privation of a looked-for good; and this species of pain needs no recondite handling. There can hardly be any fact more elementary than that the gain of a pleasure is pleasant, and its loss correspondingly painful. To receive aid and support in our

various endeavours is the same as to be successful in those endeavours, and obversely.[1]

Every circumstance that, on the one hand, lightens or eases our labours and burdens, or, on the other hand, increases or aggravates them, is pleasurable or painful according to the case. This, too, is a mere necessity of our constitution, and not a separate law of the mind. There is a pleasure in putting forth a degree of exertion within our strength and our skill; the opposite is painful. Vision in a clear light, our eyes being good, is a grateful exercise; the contrary entails suffering. To have the attention distracted by collateral solicitations is a pain of conflict, otherwise expressed by loss of strength and marring of efficiency.

[1] Mr. Bradley, in dwelling upon Conflict as a cause of pain, makes application of it to show that Surprise cannot be a neutral state, that is, indifferent to pleasure or pain. It seems to me, however, that the facts, when examined, are against him. There can be little doubt that surprises are often painful, as well as often pleasurable; yet, as these effects must be of all degrees, there ought to be a point in the scale where both kinds are at zero. Our familiar experience seems to show that surprise, as frustrating an expectation, has its character determined by what the expectation is. If I am bent on an important errand, and find my way blocked by an unforeseen obstacle, I suffer all the pain of being thwarted in something that I put a high value upon. This is the pain of conflict as regards pursuit in the objects of every-day life. If, however, I am out for a walk with no special object in view beyond the mere agreeable exercise, I may find a stoppage that I did not count upon, and may mark it as such, without being in the least degree pained or annoyed; the reason simply is that nothing depends upon my following any one particular route. There is a real surprise of the kind that awakens attention and impresses the memory with a fact of my surrounding, but the effect ends in this purely intellectual result. If in the supposed saunter I encountered a sudden shower of rain, that would be a surprise relevant to the situation; it would thwart me in the manner that I could feel, but simply because it interfered with my expected gratification. Thus it is, that all deviations from our accustomed routine in the course of things contain the intellectual shock of surprise, while only those that thwart us in some important end of pursuit can be cited as exemplifying the pains of conflict.

Intellectual Surprise is to all intents identical with what we term Novelty, which has an influence of its own partly intellectual and partly emotional. The intellectual element is the most constant. If a novel experience does nothing else, it makes an impression and abides in the memory. When we go into some new place, we count upon and expect novelties, and therefore cannot be said to be surprised in the sense of violated expectation. While the intellectual act is thus constant, the resulting feelings vary with the special incidents of the case. Our anticipations may be baffled in two different ways: we may find greater changes than we had been prepared for, or sameness where we expected change. These are surprises properly so called, but whether they gave us any degree of pain would depend upon how far we had set our heart upon our framed expectations.

Further variety of the same contrast is the difference between friendly sympathy, on the one hand, and discouragement or the counter of sympathy on the other.

The case more immediately suggested by the couple "harmony" and "discord" is what is commonly called artistic or æsthetic pleasure and pain. This opens a very wide department, but if we confine our view to its more essential peculiarity, as distinguished from the wide-ranging class of facts just alluded to, we find that it resolves itself into the subtle operation of concurrence between effects differing in their own proper nature while possessing something in common. The answering of sound to sense is a familiar example, and is well known to be a cause of pleasure in proportion to the completeness of the adaptation. So with harmonies in the different pitches of sound; and, likewise, agreeable unions of colour. Many attempts are made to explain the pleasure of this kind of harmony, but with very indifferent success. It is a safe assumption, that if the mind is solicited at two or more different points, and if the resulting sensations (being regarded as severally agreeable) have so much of a common character as to be mutually supporting, the nervous expenditure required to maintain the pleasurable states will be reduced, and we shall be gainers in consequence. Thus it is that a band of music accompanying a dance, or a march, besides being pleasant in itself, adds to the pleasure of the active state by chiming in with its particular pace. Such an assumption goes a certain way, but the facts very soon outstrip its capabilities. The notable circumstance in connexion with harmony is the astonishingly intense pleasure attainable from its higher modes—that is to say, as the harmony increases, the pleasure also increases out of all proportion. What is there in a fine voice to make such an extraordinary impression on the senses and the mind, as compared with a more ordinary one? The physical difference of the two is supposed to be resolvable into a readjustment of the over-tones that make up the special timbre of each; and how such minute adjustments can suffice to make the difference between an average singer and Mario, or Jenny Lind, is utterly baffling in our present knowledge. We have already had a parallel difficulty in the delicacy of stimulants and articles of food for which no explanation can as yet be offered.

The same difficulty appears in æsthetic combinations of a still higher kind, as in a musical air or a poetical cadence. That a certain succession of notes, the so-called musical

sentence or theme, should have a perennial charm to the human ear, is a fact that has been partly, but not fully, accounted for. The three circumstances that have been adduced by Sully and others, *viz.*, musical concord of successive notes, intellectual unity, and expression of emotion, completely fail when applied to the extreme cases. For, as shown by Gurney, there is some residual element of fascination at present beyond the reach of analysis. Possibly the elements that have been assigned, and more especially the delicate expression of emotion, might suffice for the explanation if our means of analysis and verbal definition were equal to the subtlety of the case. As it is, we find ourselves face to face with an insoluble puzzle. The felicities of our poets have been subjected to a critical scrutiny by Gurney; and although the constituents are more tangible in poetry than in music by itself, he maintains, with apparent success, the inscrutability of the resulting emotion.

To cite another example. The charm arising from the human form is partly explicable by circumstances that have been assigned, but with the same residual difficulty in accounting for the extraordinary rate of increase as the points of excellence are refined upon.

Elementary Emotions. The illustration of Harmony and Conflict has carried the discussion beyond the simpler states of feeling into the higher compounds where Sense and Idea come together. There still remains, however, a certain range of feelings not absolutely simple, yet relatively so, while entering into many important compounds. These are the more fundamental or elementary emotions of the mind, which seem to be rooted in organic and other primitive modes of stimulation. The most prominent and wide-ranging of these elementary modes of the higher feelings appear to be Love, Anger, and Fear. They are all associated with distinct organical changes, seemingly part of their nature physically viewed. In regard to the love circle of Feelings there are also specific glandular secretions, through which the emotions themselves can be awakened. In the case of the angry or malevolent outbursts, there occur violent displays of activity, as well as disturbances of the circulation through the heart's action. In fear also are exhibited disturbances of a specific nature, affecting the muscular system in the way of depression and producing derangements in the organs of excretion.

So far as the study of these effects can carry us, the inferences are at some points confirmatory of previous

inductions. The case of Fear as a depressing emotion is most nearly related to our leading generality; *viz.*, the connexion of pain with lowering of general vitality. As regards Anger, the physical seat must be referred to a region of the nervous system expressly organised for manifesting the passion. It fraternises with no other mode of mind, and is sufficiently prominent to stand by itself; while the inductive study of its manifestations is the chief source of our knowledge respecting it.

The Amicable emotions, involving the love feeling in various distinguishable varieties, have likewise definite nervous seats, of which we can give no farther explanation, being also supported by organic secretions special to themselves. Assuming that their pleasurable character has something to do with those purely organic stimulations, we can simply remark of them that they have a special efficacy in affecting the nerves, in the direction of pleasure, and are not at the same time connected with the furtherance of vitality.

Pleasures and Pains in Connexion with Ideas. The field of Ideas is even wider than that of Sense and Actuality, and introduces an entirely new set of conditions. Ideas being the traces or surviving impressions of sense, everything must depend upon the forces that determine the retention or survival of what has passed out of actual or real presence.

In the first place, from the very nature of the case, whatever the actuality was, so is the ideal continuance, with difference in degree. In point of fact, the idea, while resembling its original, has certain points of inferiority that must be allowed for. Still, there is a sameness in nature or kind. In consequence, we have to pronounce, generally, that the idea of a pleasure is pleasant and the idea of a pain painful. To multiply pleasurable ideas, and to increase their representative intensity, must be accounted one of the modes of generating pleasure; and so with pain.

Secondly. The cessation of a pain as such we have found to be, in point of fact, a source of pleasure, sometimes of a considerable amount. Nevertheless, the pain must still subsist in memory, and the memory of a pain has just been assumed to be painful. We have here to solve an apparent contradiction, for which a distinction must be made among the various kinds of pleasure and pain.[1]

[1] The recollection of a pain is necessarily of a *mixed* character. It may be painful, or it may be pleasurable, or it may be both by turns; the pre-

It is in regard to the physical pains, especially, that their cessation is not only the end of the pain, but the beginning of a pleasurable reaction : the pain is not blotted out from the memory, but the recollection of it in its painful character is completely overpowered. An acute physical pain is not really reproducible in the full strength of the actuality ; for, although we cannot forget that we have been put to pain, yet the cessation of the actual leaves us almost in the same state as if it had never been, not to speak of the pleasurable reaction that follows in certain cases. Thus the physical pains that we have passed through do not mar the enjoyment of life after the complete subsidence of the actual.

One qualifying circumstance of an important kind has yet to be stated. The memory of a pain is very efficient as a motive to the will in the prospect of recurrence. The energy of precaution inspired by recollection alone is not much less powerful than under the actual endurance ; although circumstances may affect the degree of this energy. Thus, for the purposes of the will, memory is more nearly on an equal footing with actuality ; mere retrospect we may treat as of small account, prospect is very formidable.

When, from the sense pleasures and pains, we pass to those compounded of emotion and intellect, we find the character of the survival to be greatly altered. The pleasures and pains of Affection, Malevolence, Egotism, and the various Artistic Feelings, do not pass out of being by mere cessation in the same way. Their memory, while also operative upon the will, has a more important standing in the whole life. To have had an acute attack of neuralgia or other painful ailment, if there is no fear of recurrence, is not a source of permanent depression when recalled ; to have had a severe rebuff, or defeat, in some contest, is a more lasting diminution of the stock of happiness.

Reverting to the theories of pleasure and pain that have been current since the time of Aristotle, and more especially to the physical side of pleasure as concomitant with increased activity, we may consider, according to the latest views, the capability of such a theory to represent the various species of pleasure and pain. Among the most carefully elaborated and fully illustrated renderings of this view we may quote the two papers by H. R. Marshall (Mind, Nos. 63, 64). The following is a brief summary

sent mood being a ruling consideration in the case. Both the painful infliction and the pleasure of cessation are facts for recollection, and are susceptible of being revived according to circumstances. There is nothing absolute in the nature of the recuperation.

of the position maintained. "*Pleasure and Pain are determined by the relation between the energy given out and the energy received at any moment by the physical organs which determine the content of that moment; Pleasure resulting when the balance is on the side of the energy given out, and Pain when the balance is on the side of the energy received. Where the amounts received and given are equal, then we have the state of Indifference.*"

On this statement I would submit the following critical observations:—

(1) Among the cases most fully met by this view, I may refer first to the pleasures of muscular activity, and the corresponding pains of muscular fatigue. There is no difficulty in supposing that the nourished condition of the muscles, coupled with their natural vigour in the individual at the time, strictly determines the intensity of the pleasure accompanying muscular exercise. It would be inconsistent with our conscious experience, as well as improbable on physiological grounds, to take up any other position. In the course of every muscular effort sufficiently persisted in, there is a gradual diminution of the pleasure, until we reach first indifference, and then the beginnings of pain.

When the activity is not muscular but nervous, as in our purely intellectual processes, the principle seems equally justified, notwithstanding complications growing out of the deeper processes of the mind. The general fact may be maintained, not simply in the contrasts of pleasure, indifference and pain, but in the exact concomitance of amount or degree.

In so far as muscular and nervous energies enter into any of the higher processes of the mind—productive work or emotional expenditure—the law may be presumed to be strictly applicable.

(2) It is very natural to include under the same general statement the wide-ranging property of our constitution, fully recognised by mankind in every age, the law of dependence of pleasure upon remission or change of stimulus. Remission of stimulus is obviously a part of the cases just supposed, namely, muscular and nervous expenditure; for, without remission, there could be no recuperation of the tissues involved. In the more vigorous constitutions there is a copious expenditure, with comparatively little need of repose, and according to the general statement under consideration, the pleasure would be in full accord with restoration of the vigour of the tissue, however short might be the interval requisite. The time of remission has no other significance than as a condition of the nourishment of the organs concerned.

Nevertheless, the law of cessation and change of stimulus, as culminating in the well-known pleasures of novelty, does not exactly coincide with the formula as thus explained. Interval of time according to this farther principle has an *absolute value*, and is not simply relative to nourishment of tissue. A week's confinement, with privation of all muscular exercise, would impart

a peculiar zest or relish to the resumption of the usual activities, while, in point of fact, the muscular organs would be in a far worse condition than if they had been put through their accustomed daily exercise. When General Wolseley disembarked in Egypt, with an expeditionary force, he found his operations retarded by the inability of the horses to gallop; yet we may be quite sure that their enjoyment of the free use of their limbs was much greater than their ordinary delight in their daily exercise.

There is no necessary contradiction or contrariety between the law of change for the sake of change and the law of expenditure of renewed vigour. Nevertheless, the statement of the one needs to be supplemented, or somehow modified, to include the other. Only by an independent induction could we ascertain that the pleasure of a stimulus follows, in the first place, the nourishment of the organ, and in the second place the interval of remission. The two facts are distinct in their nature, and each needs to be studied on its own ground, and not to be inferred from the known workings of the other. An organ is at its very best, in point of preparation for activity, by being exercised, up to the proper limits, without the loss of a single day, as in the training of pedestrians, mountain-climbers, boxers, or athletes. The high physical condition thus gradually engendered yields its due amount of the pleasure of exercise; but, to obtain the other pleasure, there must be longer periods of remission even at the cost of inferior vigour in resuming the exertion.

The same line of observations may be taken in regard to the more purely nervous and mental activities. To keep up the intellectual energies to their highest efficiency, they need to be maintained in steady exercise, with due observance of the limits of over-fatigue. To gain the pleasures of freshness in any one mode of effort, there needs to be a much greater remission than is implied in their daily repose; and when that larger remission is allowed, as in school vacations, it is found that the renewed zest is accompanied with temporary falling off in efficiency.

(3) The doctrine under discussion is less felicitously applicable, when we survey as above the pleasures and pains of Sensation, in its more passive modes. Even such a simple case as an acute physical smart, although nowise inconsistent with the doctrine, does not easily lend itself to that mode of statement. The theory of pain, on the hypothesis in question, is, that an organ is subjected to a stimulus after it has not merely lost surplus vigour, but has got into an impoverished or deteriorated state, and so demands a period of reparation corresponding to the loss. Now, if we suppose the nerves and organ of taste to be in a perfectly replenished condition, such as to respond, with the highest relish, to something sweet, the application of the principle would be consistently made by the gradual decay of the pleasure of sweetness, until it was as good as totally lost. But going back to the primary supposition of freshness in the organ, and ad-

ministering a very slight portion of something bitter, there comes a pain at once, notwithstanding the robust condition of the organ. It has always been found extremely embarrassing to represent this phenomenon in terms of the theory before us; while any forced endeavour to so express it, is felt to give us no manner of satisfaction in conceiving the phenomenon. In the case of a sensation positively injurious to the nerve tissue, as a prick or a scald of the skin, or an inflammatory sore, we might regard it as an extreme case of deterioration of an organ by excessive and protracted stimulus. Yet the situation is so different, that the more natural course seems to be to regard destruction of a sensitive tissue, involving injury to a nerve, as a specific adjunct and occasion of acute pain. The two different cases are perfectly compatible and congruous, although neither can be stated advantageously in terms of the other.

(4) It must be freely granted that a good condition of the organs generally is an underlying advantage in all kinds of nerve stimulus that use up force. This is denied only by the very small number of theorists that would disconnect the mental with the physical at certain points, so as to uphold the position of the absolute immateriality of the mind. The doctrine thus very generally stated has its practical importance in requiring due attention to be paid to the nourishment of the bodily system, and its exemption from causes of deterioration, with a view to mental efficiency. Of such efficiency, one important region is the maintenance of the pleasurable tone under all circumstances. Nevertheless, the anomalies and exceptions already recited reduce the specific value of the principle in a very serious degree. It is only necessary to recall the wide region of stimulants, in the shape of drugs, to show the necessity of qualifying the literal statement of the doctrine we are discussing. It is too notorious that such stimulants retain their pleasurable efficacy long after the nerves affected have sunk below par and are about to commence a reaction of pain on the way to recovery. This means a giving out of nervous strength to the pitch of total bankruptcy of the tissue; and although there is no inconsistency, on the contrary a certain congruity, with the principle before us, the fact itself must be embodied in a supplemental law of Credit, in order to eke out the theory of physical hedonics.

Another class of examples of a still more anomalous kind may be recalled from the previous exposition. As if to meet with a flat denial the statement of the law of pleasure and pain given by Kant, namely, pleasure the furtherance, and pain the hindrance, of vital action, we have the cases of sweetness and relish that are positively injurious, of bitter drugs operating as tonics, of cold in painful degrees tending to invigorate the system, of agreeable warmth tending to debility. The contradiction may not be so absolute as it seems; it merely shows the necessity of one more limitation to the principle we are considering.

(5) With regard to the applications of the theory to Fine Art, a preparatory survey of the elements of Art may be of service. In the first place, Art includes a number of pleasurable sensations of the two higher senses, sight and hearing. Secondly, it embraces both higher and lower senses when taken in idea. Thirdly, it requires a selection and purification of all such pleasures, not only with a view to omitting pains, but in order to attain a certain elevation in the shape of freedom from grossness. Fourthly, the strong elementary emotions are invoked to the full length of their pleasure-giving character, with the same purifying conditions as in the senses. Fifthly, the multiplication, variation, and alternation of pleasurable modes, with avoidance of incongruity or harsh transitions, come within the aims of the artist in all departments. After allowance for all these sources of pleasurable stimulation, we come at last to a something specific and peculiar, the characteristic of Art in itself as distinguished from the senses and the emotions in their own character. The general designation Harmony is appropriated to this class of effects. It is still sufficiently wide-ranging when we follow it into all the known departments of fine art. Recurring to what has already been advanced on this subject, we came to the conclusion that in Harmony there is a case of economising nervous power as used for pleasure-giving, and a consequent possibility of heightening a pleasurable response. So far, there is a consistency with the general maxim now before us. It is when we come to consider the extraordinary increase of pleasurable intensity due to minute adjustments of the combining elements in a work of Art, that we seem to be in a totally distinct region of mental production, which, though in no respect contradicting the present law, needs the aid of an entirely new assumption to give it hypothetical shape.

The peculiar case of rhythm in Music has been subjected to much discussion, but without any convincing result. The striking out of similarities, in the midst of dissimilarities, is partly intelligible on the principle just stated, while its higher felicities appear beyond the reach of such an explanation. The intolerable pain of the very harsh discords has no special connexion with nervous exhaustion, being the same under the highest possible vigour of the nervous tone. An inscrutable variety of molecular nerve action is set up by such discords, the obverse of some other mode belonging to the delicate varieties of concord. There is here a repetition of what occurs in the primary pains and pleasures of the special senses, and especially those whose action is chemical, and we are still without a clue to their hypothetical rendering.

(6) In the general formula of pleasure and pain, as applied to its most favourable cases, there is a numerical relation between intensity of stimulus and intensity of the resulting pleasure or pain. Nevertheless, even in our most elementary modes of

sensation, this is singularly reversed. Take the cases of tickling by the slightest conceivable contact on the skin, for which there is as yet no plausible explanation. On the other hand, the embrace of living beings, as in the mother and offspring, has a mysterious intensity of diffused thrill that seems to follow no law but its own. That there are associations engendered in this particular situation, and cumulative effects of heredity, may be allowed, yet the influence is still unique and not an example of the law in question, beyond the general propriety of a certain well-to-do condition of the system in order to maintain the thrill.

(7) A theory of pleasure and pain is wanting if it does not somehow introduce us to the very great variety of modes of both the one and the other. The science of the human mind is incomplete, so long as it fails to classify our hedonic states according to the closeness of their similarity. The division of our susceptibilities according to our known sense organs is one obvious mode of effecting such a classification. To this should follow, if possible, some theory connecting the several species with their sense foundations, and accounting for the distinctive workings of both pleasure and pain. The theory that we are engaged in discussing does go some way to meet this want, but leaves a very large region untouched and inexplicable. I doubt whether it covers one-third of the ground. As regards the higher emotions, it may be pressed into the service in accounting for the depression of Fear, but not for the intense enjoyments and severe pains allied with the Amicable and the Malevolent modes.

II.—THE CHANGES OF METHOD IN HEGEL'S DIALECTIC. (II.)

By J. Ellis McTaggart.

The conclusion at which we arrived at the end of the first part of this article—namely, that the dialectic, even if we assume its validity, does not completely and perfectly express the nature of thought—is startling and paradoxical. For the validity of the dialectic method at all, and its power of adequately expressing the ultimate nature of thought, are so closely bound up together, that they may well appear at first sight to be inseparable. The dialectic process is a distinctively Hegelian idea. Doubtless the germs of it are to be found in Fichte and others; but it was only by Hegel that it was fully worked out and made the central point of a philosophy. And in so far as it has been held since, it has been held substantially in the manner in which he stated it. To retain the doctrine, and to retain the idea that it is of cardinal importance while denying that it adequately represents the nature of thought, appears to be a most unwarranted and gratuitous choice between ideas which their author held to be inseparable.

Yet I cannot see what alternative is left to us. For it is Hegel himself who refutes his own doctrine. The state to which the dialectic, according to him, gradually approximates is one in which the terms thesis, antithesis, and synthesis can have no meaning. For in this state there is no opposition to create the relation of thesis and antithesis, and, therefore, no reconciliation of that opposition to create a synthesis. "Whatever is distinguished is without more ado and at the same time declared to be identical, one with another, and with the whole." "The antithesis which the Motion lays down is no real antithesis." (*Enc.* section 161.) Now, nowhere in the dialectic do we entirely get rid of the relation of thesis, antithesis, and synthesis, not even in the final triad of the process. The inference seems inevitable that the dialectic cannot fully represent, in any part of its movement, the real and essential nature of pure thought. The only thing to be done is to consider whether, with this all-important limitation, the process has any longer any real significance, and if so, how much.

Since the dialectic does, if the hypothesis I have advanced

be correct, represent the inevitable course our minds are logically bound to follow, when they attempt to deal with pure thought, while it does not adequately represent the nature of pure thought itself, it follows that it must be in some degree subjective. We have now to determine exactly the meaning to be applied to this rather ambiguous word in this connexion. On the one hand, it is clear that it is not subjective in the sense in which the word has been defined as meaning "that which is mine *or* yours". It is no mere empirical description or generalisation. For whatever we may hold with regard to the success or failure of the dialectic in apprehending the true nature of thought will not at all affect the question of its internal necessity and of its cogency for us. The dialectic is not an account of what men have thought or may think. It is a demonstration of what they must think, provided they wish to deal with Hegel's problem at all, and to deal with it consistently and truly.

On the other hand, we must now pronounce the dialectic process to be subjective in this sense—that it does not fully express the essential nature of thought, but obscures it more or less under particulars which are not essential. It may not seem very clear at first sight how we can distinguish between the necessary course of the mind when engaged in pure thought, which the dialectic method, according to this hypothesis, is admitted to be, and the essential nature of thought, which it is not allowed that it can express. What, it may be asked, is the essential nature of thought, except that course which it must and does take, whenever we think?

We must remember, however, that according to Hegel thought can only exist in its complete and concrete form—that is, as the Absolute Idea. The import of our thought may be, and of course often is, a judgment under some lower category, but our thought itself, as an existent fact, distinguished from the meaning it conveys, must be concrete and complete. For to stop at any category short of the complete whole involves a contradiction, and a contradiction is a sign of error. Now our judgments can be erroneous and often are, and so we can, and do, make judgments which involve a contradiction. But there is no intelligible meaning in saying that a fact is erroneous, and therefore, if we find a contradiction in any judgment, we know that it cannot be true of facts. It follows that, though it is unquestionably true that we can predicate *in* thought categories other than the highest, and even treat them as final, it is no less

certain that we cannot truly predicate *of* thought, any more than of any other reality, any category but the Absolute Idea.

This explains how it is possible for the actual and inevitable course of thought not to express fully and adequately its own nature. For thought may be erroneous or deceptive, when it is treating of thought, as much as when it is treating of any other reality. And it is possible that under certain circumstances the judgment expressed in our thoughts may be inevitably erroneous or deceptive. If these judgments have thought as their subject-matter we shall then have the position in question—that the necessary course of thought will fail to express properly its own nature.

It is, of course, the fact that we should never know that a particular judgment had expressed inadequately the nature of thought unless some other judgment afterwards corrected it, and enabled us to see where the mistake lay. It would be, therefore, meaningless to say that our judgments were always necessarily inadequate to the nature of thought. For if it were so, we could never find it out. But it is quite possible that, under given circumstances, our judgments may be inadequate to the nature of thought, and that we may detect this inadequacy by means of other judgments made under more favourable circumstances. And this is what I maintain with regard to the dialectic. When we are engaged in actually making the transitions from category to category, we are compelled to regard the process in a way which we afterwards see to be only partially correct, when, from the knowledge gained by the completion of the whole logic, we look back, and consider what is involved in its existing at all.

The mistake, as we have already noticed, consists in the fact that whereas the true process,—which forms the essence of the actual process in time, and which alone is preserved and summed up in the Absolute Idea,—is a direct process from one term which exists only in the transition to another, the actual process, on the other hand, is one from contradictory to contradictory, each of which is conceived as possessing some stability and independence. The reason of this mistake lies in the nature of the process, as one from error to truth. For while error remains in our conclusions, it must naturally affect our comprehension of the logical relations by which those conclusions are connected, and induce us to suppose them other than they are. In particular, it may be traced to the circumstance that the dialectic starts with the knowledge of the part, and from this works up to the knowledge of the whole. This method of procedure is

always inappropriate in anything of the nature of an organism. Now the reality denoted by the Absolute Idea is more than an organism. The Absolute Idea contains within itself the idea of organism, and transcends and completes it. The form of combination in the Absolute Idea is even more intimate and close than that of organism,—one in which the parts are still more indivisibly and essentially related to the whole. And here, therefore, even more than with organisms, will it be an inadequate and deceptive attempt if we endeavour to comprehend the whole from the stand-point of the part. And this is what the dialectic, as it progresses, must necessarily do. Consequently, not only are the lower categories of the dialectic inadequate except as mere moments of the Absolute Idea, but their relation to each other is not the relation which they have in the Absolute Idea, and consequently in all existence. These relations, in the dialectic, represent more or less the error through which the human mind is gradually attaining to the truth. They do not adequately represent the relations existing in the truth itself. To this extent, then, the dialectic is subjective.

9. And the dialectic is also to be called subjective because it not only fails to show clearly the true nature of thought, but, as we remarked above, does not fully express its own meaning—the meaning of the process forwards. For the real meaning of the advance, if it is to have any objective reality at all, if it is to be a necessary consequence of all attempts at deep and consistent thinking, must be the result of the nature of thought as it exists. Our several judgments on the nature of thought have not in themselves any power of leading us on from one of them to another. It is the relation of these judgments to the concrete whole of thought, incarnate in our minds and in all our experience, which creates the dialectic movement. Since this is so, it would seem that the real heart and kernel of the process is the movement of abstractions to rejoin the whole from which they have been separated, and that the essential part of this movement is that by which we are carried from the more abstract to the more concrete. This will be determined by the relations in which the finite categories stand to the concrete idea, when they are viewed as abstractions from it and aspects of it—the only sense in which they really exist. But the true relation of the abstractions to the concrete idea is, as we have already seen, that to which the dialectic method gradually approximates, but which it never reaches, and not that which it starts with and gradually, but never

entirely, discards. And so the dialectic advance has, mixed up with it, elements which do not really belong to the advance, nor to the essence of pure thought, but are merely due to our original ignorance about the latter, of which we only gradually get rid. For all that part of the actual advance in the dialectic, which is different from the advance according to the type characteristic of the Notion, has no share in the real meaning and value of the process, since it does not contribute to what alone makes that meaning and value, the restoration of the full and complete idea. What this element is we can learn by comparing the movement of the dialectic which is typical of Being with that which is typical of the Notion. It is the element of opposition and contradiction, the element of immediacy in the finite categories, and the negation by them of their antitheses, and (until forced, so to speak, into submission) of their syntheses. It is, so to speak, the transverse motion as opposed to the forward motion. The dialectic always moves onwards at an angle to the straight line which denotes advance in truth and concreteness. Starting unduly on one side of the truth, it oscillates to the other, and then corrects itself. Once more it finds that even in its corrected statement it is still one-sided, and again swings to the opposite extreme. It is in this indirect way alone that it advances. And the essence of the process is the advance alone. The whole point of the dialectic is its gradual attainment to the Absolute Idea. In so far, then, as the process is not direct advance to the absolute, it does not express the essence of the process only, but also the inevitable inadequacies of the human mind when considering a subject-matter which can only be fully understood when the consideration has been completed.

And, as was remarked above, it also fails to express its own meaning in another way. For the imperfect type of transition, which is never fully eliminated, represents the various categories as possessing some degree of independence and self-subsistence. If they really possessed this, they could not be completely absorbed in the syntheses, and the dialectic could not be successful. The fact that it is successful proves that it has not given a completely correct account of itself, and, for this reason also, it deserves to be called subjective, since it does not fully express the objective reality of thought.

Moreover, the method in the higher categories is described as making explicit that which was implicit lower down. Now the distinction between explicit and implicit is only that between what is completely and what is incompletely

understood. The peculiarities of the method in the lower categories, therefore, must be due to the subject being as yet not fully understood. This defect cannot attach to finite categories as moments of the Absolute Idea, for as such, being seen in the light of the whole, they must be fully understood. And the Absolute Idea, according to Hegel, is completely true, and adequate to express reality, and its composition cannot, therefore, be in any way due to our want of comprehension. Now, as we have seen, the essential part of the dialectic process depends on the relation of the finite categories to the Absolute Idea. The characteristics of method from which the dialectic gradually works itself free are, therefore, to be looked on only as necessary confusions of the human mind in beginning its investigations of the nature of pure thought. And as the dialectic never quite shakes itself free from these characteristics, it always retains some amount of the confusion, and can never, therefore, perfectly represent the true nature of thought.

10. Having decided that the dialectic is to this extent subjective, we have to consider how far this will reduce its cardinal significance in philosophy, or its practical importance. I do not see that it need do either. For all that results from this new position is that the dialectic is a process through error to truth. Now we knew this before. For on any theory of the dialectic it remains true that it sets out with inadequate ideas of the universe, and finally reaches adequate ideas. We now go further and say that the relation of these inadequate ideas to one another does not completely correspond to anything in the nature of things. But the general position is the same as before, that we gain the truth in the dialectic, but that the steps by which we reach it contain mistakes. We shall see that there is no essential difference between them in this respect if we consider in more detail in what the importance of the dialectic lies.

This importance is threefold. The first branch of it depends chiefly on the end being reached, and the second two chiefly on the means by which it is reached. The first of these lies in the conclusion that if we can predicate any category whatever of a thing, we are thereby entitled to predicate the Absolute Idea of it. Now we can predicate some category of everything whatever, and the Absolute Idea is simply the description in abstract terms of the human reason, or, in other words, the human spirit is the incarnation of the Absolute Idea. From this it follows that the mind could, if it only saw clearly enough, see itself in every-

thing. The importance of this conclusion is obvious. It gives the assurance of that harmony between ourselves and the world for which philosophy always seeks, and by which alone science, morality, and religion can be ultimately justified.

Hegel was entitled, on his own premises, to reach this conclusion by means of the dialectic. And the different view of the relation of the dialectic to reality, which I have ventured to put forward, does not at all affect the validity of the dialectic for this purpose. For the progress of the dialectic remains as necessary as before. The progress is indirect, and we have come to the conclusion that the indirectness of the advance is not in any way due to the essential nature of pure thought, but entirely to our own imperfect understanding of that nature. But the whole process is still necessary, and the direct advance is still essential. And all that we want to know is that the direct advance is necessary. We are only interested, for this particular purpose, in proving that from any possible stand-point we are bound in logical consistency to advance to the Absolute Idea. In this connexion it is not of the least importance what is the nature of the road we travel, provided that we must travel it, nor whether the steps express truth fully, provided that the final conclusion does so. Now the theory of the subjectivity of the dialectic process leaves the objectivity and adequacy of the result of the dialectic unimpaired. And therefore for this function the system is as well adapted as it ever was.

11. The second ground of the importance of the Hegelian logic consists in the information which it is able to give us about the world as it is here and now for us, who have not yet been able so clearly to interpret all phenomena as only to find our own most fundamental nature manifesting itself in them. As we see that certain categories are superior in concreteness and truth to others, since they come later in the chain and have transcended the meaning of their predecessors, we are able to say that certain methods of regarding the universe are more correct and significant than others. We are able to see that the idea of organism, for example, is a more fundamental explanation than the idea of causality, and one which we should prefer whenever we can apply it to the matter in hand.

Here also the value of the dialectic remains unimpaired. For whether it does or does not express the true nature of thought with complete correctness; it certainly, according to this theory, does show the necessary and inevitable con-

nexion of our finite judgments with one another. The utility which we are now considering lies in the guide which the dialectic can give us to the relative validity and usefulness of these finite judgments. For it is only necessary to know their relations to one another, and to know that as the series goes further, it goes nearer to the truth. Both these things can be learnt from the dialectic. That it does not tell us the exact relations which subsist in reality is unimportant. For we are not here judging reality, but our own judgments about reality.

The third function of the dialectic process is certainly destroyed by the view of it as subjective which I have expressed. For Hegel the dialectic showed the relation of the categories to one another as moments in the Absolute Idea, and in reality. We are now forced to consider those moments as related in a way which is inadequately expressed by the relation of the categories to one another. We are not however deprived of anything essential to the completeness of the system by this. In the first place, we are still able to understand completely and adequately what the Absolute Idea is. For although one definition was given of it by which it was simply the whole series of the categories gathered into a whole, yet a more direct and independent one may also be found, by which it is described as "the notion of the idea to which the idea itself is the object"—as the mind which recognises itself in all things. Our inability to regard the process any longer as an adequate analysis of the Absolute Idea will not leave us in ignorance of what the Absolute Idea really is.

And, in the second place, we are not altogether left in the dark even as regards the analysis of the Absolute Idea. The dialectic, it is true, never fully reveals the true nature of thought which forms its secret spring, but it gives us data by which we can discount the necessary error. For the connexion of the categories resembles the true nature of thought (which is expressed in the typical transition of the Notion), more and more closely as it goes on, and at the end of the logic it differs from it only infinitesimally. By observing the type to which the dialectic method approximates throughout its course, we are thus enabled to tell what element in it is that which is due to the essential nature of thought. It is that element which is alone left when, in the typical movement of the Notion, we see how the dialectic would act if it could act with full self-consciousness. It is true that in the lower categories we can never see the transition according to this type, owing to the necessary con-

fusion of the subject-matter in so low a stage, which hides the true nature of the process to which the dialectic endeavours to approximate. But we can regard the movement of all the categories as compounded, in different proportions according to their position, of two forces, the force of opposition and negation, and the force of advance and completion, and we can say that the latter is due to the real nature of the advancing dialectical thought and the former to our misconceptions about it. In other words, the amount of error in the dialectic is inevitable, but it can be ascertained, and need not therefore introduce any doubt or scepticism into the conclusions to which the dialectic may lead us.

12. What then is this real and essential element in the advance of thought which is revealed, though never completely, in the dialectic? In the first place, it is an advance which is direct. The element of indirectness which is introduced by the movement from thesis to antithesis, from opposite to opposite, diminishes as the dialectic proceeds, and, in the ideal type, wholly dies away. In that type each category is seen to carry in itself the implication of the next beyond it, to which thought then proceeds. The lower is lower only because of the implicitness of part of its meaning; it is no longer one-sided, requiring to be corrected by an equal excess on the other side of the truth. And, therefore, no idea stands in an attitude of opposition to any other; there is nothing to break down, nothing to fight. All that aspect of the process belongs to our misapprehension of the relation of the abstract to the concrete. While looking up from the bottom, we may imagine the truth is only to be attained by contest, but in looking down from the top—the only true way of examining a process of this sort—we see that the contest is only due to our misunderstanding, and that the growth of thought is really direct and unopposed.

The movement of the dialectic may perhaps be compared with advantage to that of a ship tacking against the wind. If we suppose that the wind blows exactly from the point which the ship wishes to reach, and that, as the voyage continues, the sailing powers of the ship improve so that it becomes able to sail closer and closer to the wind, the analogy will be rather exact. It is impossible for the ship to reach its destination by a direct course, as the wind is precisely opposite to the line which that course would take, and in the same way it is impossible for the dialectic to move forward without the triple relation of its terms, and without some opposition between thesis and antithesis. But the only object of the ship is to proceed towards the port, as the

only object of the dialectic process is to attain to the concrete and complete idea, and the movement of the ship from side to side of its course is labour wasted, in so far as the end of the voyage is concerned, though necessarily wasted, since the movement forward would be impossible without the combination with it of a lateral movement. In the same way the advance in the dialectic is merely in the gradually increasing completeness of the ideas, and the opposition of one idea to another, and the consequent negation and contradiction do not mark any real step towards attaining the knowledge of the essential nature of thought, although they are necessary accompaniments of the process of gaining that knowledge. Again, the change in the ship's course which brings it nearer to the wind, and reduces the distance which it is necessary to travel to accomplish the journey, will correspond to the gradual subordination of the elements of negation and opposition which we have seen to take place as we approach the end of the dialectic.

13. We shall find confirmation for our view of the gradual change in the method of the dialectic, if we examine the all-including and supreme triad, of which all the others are moments. This triad is given by Hegel as Logic, Nature and Spirit.

If we inquire as to the form which the dialectic process is likely to assume here, we find ourselves in a difficulty. For the form of transition in any particular triad was determined by its place in the series. If it was among the earlier categories it approximated to the character given as typical of Being; it it did not come till near the end it showed more or less resemblance to the type of the Notion. And we were able to see that this was natural, because the later method, being more direct and less encumbered with irrelevant material, was only to be attained when the work previously done had given us sufficient insight into the real nature of the subject-matter. This principle, however, will not help us here. For the transition which we are here considering is both the first and the last of its series, and it is impossible therefore to determine its characteristic features by its place in the order. The less direct method is necessary when we are dealing with the abstract and imperfect categories with which our investigations must begin, the more direct method comes with the more adequate categories. But his triad covers the whole range, from the barest category of the Logic—that of pure Being—to the culmination of human thought in Absolute Spirit.

Since it covers the whole range in which all the types of

the dialectic method are displayed, the natural conclusion would seem to be that one of them is as appropriate to it as another, that whichever form may be used will be more or less helpful and significant, because the process does cover the ground in which that form can appropriately be used; while, on the other hand, every form will be more or less inadequate, because the process covers ground on which it cannot appropriately be used. If we cast it in the form of the Notion, we shall ignore the fact that it starts with categories too inadequate for a method so direct; if, on the other hand, we try the form of the categories of Being, the process contains material for which such a method is inadequate.

And if we look at the facts we shall find that they confirm this view, and that it is possible to state the relation of Logic, Nature, and Spirit to one another, in two different ways. Hegel himself states it in the manner characteristic of the Notion. It is not so much positive, negative, and synthesis, as universal, particular, and individual that he points out. In the Logic thought is to be found in pure abstraction from all particulars (we cannot, of course, think it as abstracted from particulars, but in the Logic we attend only to the thought, and ignore the data it connects). In Nature we find thought again, for Nature is part of experience, and more or less rational, and this implies that it has thought in it. In Nature, however, thought is rather buried under the mass of data which appear contingent and empirical; we see the reason is there, but we do not see that everything is completely rational. It is described by Hegel as the idea in a state of alienation from itself. Nature is thus far from being the mere contrary and correlative of thought. It is thought and something more, thought incarnate in the particulars of sense. At the same time, while the transition indicates an advance, it does not indicate a pure advance. For the thought is represented as more or less overpowered by the new element which has been added, and not altogether reconciled to and interpenetrating it. In going forward it has also gone to one side, and this requires, therefore, the correction which is given to it in the synthesis, when thought, in Spirit, completely masters the mass of particulars which for a time had seemed to master it, and when we perceive that the truth of the universe lies in the existence of thought as fact, the incarnation of the Absolute Idea—in short, in Spirit.

Here we meet all the characteristics of the Notion. The second term, to which we advance from the first, is to some

extent its opposite, since the particulars of sense, entirely wanting in the first, are in undue prominence in the second. But it is to a much greater extent the completion of the first, since the idea, which was taken in the Logic in unreal abstraction, is now taken as embodied in facts, which is the way it really exists. The only defect is that the embodiment is not yet quite complete and evident. And the synthesis which removes this defect does not, as in earlier types of the dialectic, stand impartially between thesis and antithesis, each as defective as the other, but only completes the process already begun in the antithesis. It is not necessary to compare the two lower terms, Logic and Nature, to be able to proceed to Spirit. The consideration of Nature alone would be sufficient to show that it postulated the existence of Spirit. For we have already in Nature both the sides required for the synthesis, though their connexion is so far imperfect, and there is consequently no need to refer back to the thesis, whose meaning has been incorporated and preserved in the antithesis. The existence of the two sides, not completely reconciled, in the antithesis, in itself postulates a synthesis, in which the reconciliation shall be completed.

14. But it would also be possible to state the transition in the form which is used in the Logic for the lower part of the dialectic. In this case we should proceed from pure thought to its simple contrary, and from the two together to a synthesis. This simple contrary will be the element which, together with thought, forms the basis for the synthesis which is given in Spirit. And as Nature, as we have seen, contains the same elements as Spirit, though less perfectly developed, we shall find this contrary of thought to be the element in experience, whether of Nature or Spirit, which cannot be reduced to thought. Now of this element we know that it is immediate and that it is particular—not in the sense in which Nature is particular, in the sense of incompletely developed individuality, but of abstract particularity. It is possible to conceive that in the long run all other characteristics of experience except these might be reduced to a consequence of thought. But however far the process of rationalisation might be carried, and however fully we might be able to answer the question of why things are as they are and not otherwise, it is impossible to get rid of a datum which is immediate and therefore unaccounted for. For thought is only mediation, and must therefore exist in conjunction with something immediate on which to act. If nothing existed but thought

itself, still the fact of its existence must be in the long run immediately given, and one for which thought itself could not account. This immediacy is the mark of the element which is essential to experience and irreducible to thought.

If then we wished to display the process from Logic to Spirit according to the Being-type of transition we should, starting from pure thought as our thesis, put as its antithesis the element of immediacy and "givenness" in experience. This element can never be properly or adequately described, since all description involves the predication of categories of the subject and is consequently mediation; but by abstracting the element of mediation in experience, as in the logic we abstract the element of immediacy, we can form some idea of what it is like. Here we shall have thought and immediacy as exactly opposite and counterbalancing elements. They are each essential to the truth, but present themselves as opposed to one another. Neither of them has the other at all as a part of itself, though by external reasoning it can be seen that one implies the other. But each of them negates the other as much as it implies it, and the relation, without the synthesis, is one of opposition and contradiction. We cannot see, as we can when a transition assumes the Notion form, that the whole meaning of the one category lies in its transition to the other. The synthesis is the notion of experience or reality, in which we have the given immediate mediated. This contains both Nature and Spirit, the former as the more imperfect stage, the latter as the more perfect, culminating in the completely satisfactory conception of Absolute Spirit. Nature stands in this case in the same relation to Absolute Spirit as do the lower forms of spirit—as forms equally concrete but less perfectly developed.

This triad could give as cogent a proof as the other. It could be shown, in the first place, that mere mediation is unmeaning except in relation to the merely immediate. since without something to mediate it could not act. In the same way it could be shown that the merely given, without any action of thought on it, could not exist, since any attempt to describe it, or even to assert its existence, involves the use of some category, and therefore of thought. And these two extremes, each of which negates the other and at the same time demands it, are reconciled in the synthesis of actual experience, whether Nature or Spirit, in which the immediate is mediated, and both extremes in this way gain for the first time reality and consistency.

The possibility of this alternative arrangement affords, as

I mentioned above, an additional argument in favour of the view that the change of method is essential to the dialectic, and that it is due to the progressively increasing insight into the subject which we gain as we pass to the higher categories and approximate to the completely adequate result. For in this instance, when the whole ground from beginning to end of the dialectic process is covered in a single triad, we find that either method may be used, which suggests of itself that the two methods are approximate to the two ends of the series which are here, and here only, united by a single step. Independently of this, however, it is also worth while to consider the possibility of the double transition attentively, because it may help us to explain the origin of some of the misapprehensions of Hegel's meaning which are by no means uncommon.

We saw above that the dialectic more closely represented the real nature of thought in the later categories, when it appeared more direct and spontaneous, than in the earlier stages, when it was still encumbered with negations and contradictions. Of the two possible methods of treating this particular transition—that which Hegel actually adopted, and that which we have just seen to be also possible—it would appear beforehand that the former would be that which would be the most expressive and significant. On inquiry we shall find that this is actually the case. For there is no real opposition between thought and immediacy; neither can exist without the other. Now, in the method adopted by Hegel, the element of immediacy comes in first in Nature, and not as an element opposed to, though necessarily connected with, the mediation of the logic, but as already bound up with it in a unity, which unity is Nature. This expresses the truth better than a method which starts by considering the two aspects as two self-centred and independent realities, which have to be connected by reasoning external to themselves. For by the latter, even where they are finally reconciled in a synthesis, it is done, so to speak, against their will, since their claims to independence are only forced from them by the *reductio ad absurdum* to which they are reduced when they are seen, as independent, to be at once mutually contradictory and mutually implied in each other. In this method the transitory nature of the incomplete categories, and their movement forward of their own essential nature, are not sufficiently emphasised.

And we shall find that the subject-matter of the transition is too advanced to bear stating according to the Being-type without showing that that type is not fully appropriate

to it. Logic and immediacy are indeed as much on a level as Being and Not-Being. There is no trace whatever in the former case, any more than in the latter, of a rudimentary synthesis in the antithesis. But the other characteristic of the lower type—that the thesis and the antithesis should claim to be mutually exclusive and independent—cannot be fully realised. Being and Not-Being, although they may be shown by reasoning to be mutually implicated, are at any rate *primâ facie* distinct and opposed. But mediation and immediacy, although opposed, are nevertheless connected, even *primâ facie*. It is impossible even to define the two terms without suggesting that each of them is, by itself, unstable, and that their only real existence is as aspects of the concrete whole in which they are united. The method is not sufficiently advanced for the matter it deals with, which compels it to modify its form.

15. It is, however, as I endeavoured to show above, *a priori* probable that neither method would fully fit this particular case. And not only the one which we have just discussed, but the one which Hegel preferred to it, will be found to some degree inadequate to its task here. The latter, no doubt, is the more correct and convenient of the two; yet its use alone, without the knowledge that it did not in this case exclude the concurrent use of the latter as equally legitimate, may lead to grave miscomprehensions of the system.

For the use of that method which Hegel does not adopt—the one in which the terms are Logic, Immediacy, and Experience—has at any rate this advantage, that it brings out the fact that Immediacy is as important and ultimate a factor in reality as Logic is, and one which is irreducible to it. The two terms are exactly on a level. In point of fact we begin with the Logic and go from that to Immediacy, because it is to the completed idea of the Logic that we come if we start from the idea of pure Being, and we naturally start from that idea, because it alone, of all our ideas, is the one whose denial carries with it at once and clearly, self-contradiction. But the transition from Immediacy to Logic is exactly the same as that from Logic to Immediacy. And as the two terms are correlative in this way, it would be comparatively easy to see, by observing them, that neither of them derived their validity from the other, but both from the synthesis.

This is not so clear when the argument takes the other form. The element of Immediacy here never appears as a separate and independent term at all. It appears in Nature for the

first time, and here it is already in combination with thought. And Nature and Logic are not correlative terms, from either of which we can proceed to the other. The transition runs from Logic to Nature—from thought by itself, to thought combined with Immediacy. It is not unnatural, therefore, to suppose that Immediacy is dependent on, and deducible from, pure thought, while the reverse process is not possible. The pure reason is supposed to make for itself the material in which it is embodied. "The logical bias of the Hegelian philosophy," says Pro. Seth, "tends . . . to reduce things to mere types or 'concretions' of abstract formulæ." (*Hegelianism and Personality*, p. 126.) It might, I think, be shown that other considerations conclusively prove this view to be incorrect. In the first place, throughout the Logic there are continual references which show that pure thought requires some material, other than itself, in which to work. And, secondly, the spring of all movement in the dialectic comes from the synthesis towards which the process is working, and not from the thesis from which the start is made. Consequently, progress from Logic to Nature could, in any case, prove, not that the additional element in nature was derived from thought, but that it co-existed with thought in the synthesis which is their goal. But although the mistake might have been avoided, even under the actual circumstances, it could scarcely have been made if the possibility of the alternative method of deduction had been known. Immediacy would, in that case, have been treated as a separate element in the process, and as one which was correlative with pure thought, so that it could scarcely have been supposed to have been dependent on it.

The more developed method, again, tends rather to obscure the full meaning and importance of the synthesis, unless we realise that in this method part of the work of the synthesis is already done in the second term. This is of great importance, because we have seen that it is in their synthesis alone that the terms gain any reality and validity, which they did not possess when considered in abstraction. In the earlier method we see clearly that pure thought is one of these abstractions, as mere immediacy is the other. It is, therefore, clear that each of these terms, taken by itself, is a mere abstraction, and could not possibly, out of its own nature, produce the other abstraction, and the reality from which they both come. From this standpoint it would be impossible to suppose that out of pure thought were produced Nature and Spirit.

Now, in the type characteristic of the Notion, the same

element appears both in thesis and antithesis, although in the latter it is in combination with a fresh element. There is, therefore, a possibility of misunderstanding the process. For an element which was both in thesis and antithesis might appear not to be merely a one-sided abstraction, but to have the concreteness which is to be found in the synthesis, since it appears in both the extremes into which the synthesis may be separated. When, for example, we have Logic, Nature, and Spirit, we might be tempted to argue that pure thought could not be only one side of the truth, since it was found in each of the lower terms—by itself in Logic, and combined with immediacy in Nature, and hence to attribute to it a greater self-sufficiency and importance than it really possesses.

This mistake will disappear when we realise that the only reason that pure thought appears again in the second term of the triad is that the synthesis, in transitions of this type, has already begun in the antithesis. It is only in the synthesis that thought appears in union with its opposite, and, apart from the synthesis, it is as incomplete and unsubstantial as is immediacy.

But the change in the type of the process is not sufficiently emphasised in Hegel, and there is a tendency on the part of observers to take the type presented by the earliest categories as that which prevails all through the dialectic. And as, in the earlier type, one of the extremes could not have been found in both the first and second terms of a triad, it is supposed that pure thought cannot be such an extreme, cannot stand in the same relation to Spirit, as Being does to Becoming, and is rather to be looked on as the cause of what follows it than as an abstraction from it.

16. I have endeavoured to show that the view of the dialectic given in this paper, while we cannot suppose it to have been held by Hegel, is, nevertheless, not unconnected with his system. The germs of it are to be found in his exposition of the change of method in the three great divisions of the process, and the observation of the details of the system confirm this. But it was not sufficiently emphasised, nor did Hegel draw from it the consequences, particularly as regards the subjective nature of the dialectic, which I have tried to show logically result from it.

But there is, nevertheless, justification for our regarding this theory as a development and not a contradiction of the Hegelian system, since some such view is really a condition of the existence of any dialectic system at all. And we have seen that it will affect neither of the great objects which

Absolute Idealism claims to have accomplished—the demonstration that the real is rational and the rational is real, and the classification, according to their necessary relations and intrinsic value, of the various categories which we use in ordinary and finite thought.

Many other questions might be raised, and indeed must be raised before even the formal validity of the Hegelian system could be finally determined. Perhaps the most important of these is the relation of the dialectic process to the movement of time. How far Hegel regarded the Absolute Idea as already realised and how far only as an ideal, how the fundamental rationality of the universe is related to the obvious imperfections, either in the world or our judgments about it, which exist round us, and what amount of objective or subjective reality can be ascribed to the incomplete dialectic process—these are points of vital importance. Not less important is the consideration of the nature of the Absolute Spirit which gives reality to the whole process, and which is treated by Hegel in a manner which would require careful criticism. But with these points it is impossible for me to deal here.

The dialectic system is not so wonderful or mystic as it has been represented to be. It makes no attempt to deduce existence from essence ; it does not even attempt to eliminate the element of immediacy in experience, and to produce a self-sufficient and self-mediating thought. It cannot even, if the view I have taken is right, claim that its course is a perfect mirror of the nature of reality. But although the results which it attains are comparatively commonplace, they go as far as we can for any practical purpose desire. For, if we accept the system, we learn from it that in the universe is realised the whole of reason, and nothing but reason. Contingency, in that sense in which it is baffling and oppressive to our minds, has disappeared. For it would be possible, according to this theory, to prove that the only contingent thing about the universe was its existence as a whole, and this is not contingent in the ordinary sense of the word. Hegel's philosophy is thus capable of satisfying the needs, theoretical and practical, to satisfy which philosophy originally arose, nor is there any reason to suppose that he ever wished it to do more.

III.—THE LEIPSIC SCHOOL OF EXPERIMENTAL PSYCHOLOGY.

By E. Bradford Titchener.

The object of this article is to give a general survey of the researches carried out in Wundt's Institute, and of the other psychological contents of the *Philosophische Studien*, from the date of Prof. Cattell's paper on "The Psychological Laboratory at Leipsic" to the present time. The material with which Prof. Cattell had to deal was classified by him as convenience dictated.[1] It has seemed to me more suitable to follow the divisions of the *Physiologische Psychologie*, and to employ Wundt's terminology throughout. I have aimed, so far as space allows, at giving a critical rather than a merely descriptive account of the various researches under notice; although many of the questions at issue are too complicated to be adequately dealt with in any other way than by an independent discussion.

I. *The Physical Basis of Mental Life.* The counter-criticism of Prof. H. Munk's views upon cerebral localisation and specific nerve-energy, with which Wundt opens the sixth volume of the *Studien*, is interesting both as containing the latter's last word upon the two questions, and as showing how dangerous it is for a 'pure' physiologist to meddle in psychology.[2] According to Prof. Munk, each sense-centre is, on the one hand, a projection-sphere for the peripheral excitations of the sense-organ, and, on the other, a store-house of memorial representations of such excitations. Hence the distinction, *e.g.*, between "cortical" and "mental" blindness. Wundt points out, that the psychology of the latter supposition is worthy of a believer in the 'faculties' of the phrenologists. He notices the gradual approximation of the extreme schools—of Hitzig and Luciani on the one side, and of the followers of Flourens on the other; and repeats his conviction that facts and not hypotheses are the present desiderata.

[1] Mind, xiii. pp. 37-51.

[2] "Zur Frage der Localisation der Grosshirnfunctionen," *Phil. Stud.* vi. pp. 1-25. *Phys. Psych.* (3te Aufl.) i. pp. 218 ff., 332 ff. H. Munk, "Ueber die centralen Organe für das Sehen und das Hören bei den Wirbelthieren," *Sitzungsbericht der kgl. Preuss. Academie der Wissenschaften*, June 20, 1889.

The doctrine of specific energies, as expounded by J. Müller and Helmholtz, had been opposed by Wundt mainly on two grounds: (1) that in the absence of a particular sense-organ the existence of sensations of that sense had never been observed; and (2) that the assumption of specific energies presupposes a theory of the constancy of organic forms. After restating these arguments at some length, he gives a clear account of his own view—that the central nervous elements were to begin with functionally indifferent, and only gradually acquired a special function owing to internal molecular changes caused by their peripheral connexions. The taking on of vicarious function is then an adaptation to a new set of functional conditions; its range of possibility becoming increasingly limited with increasing complication of brain-structure.

II. *Sensation.* (*a*) *Intensity.* The most noteworthy feature of Prof. Kraepelin's article on psycho-physical method is his condemnation of the method of right and wrong cases in its present form. The difficulty which the judgments "equal" and "doubtful" present to the application of mathematical formulæ to experimental results gained by this method has occupied psycho-physicists from the beginning. Fechner at first halved the offending judgments; and thus, from the equation $r + f + z = n$, obtained $r^1 + f^1 = n$ (where $r^1 = r + \frac{z}{2}, f^1 = f + \frac{z}{2}$); r^1 and f^1 being alone taken into account in the determination of the threshold of difference.[1] G. E. Müller uses them differently. We may regard them as belonging to a sphere of sensations (T) which lies midway between $i_1 > i$ and $i_1 < i$ (i_1 and i being the stimuli, and the signs referring to a judgment of just perceptible sensation-difference); and may assume that a definite point of T corresponds to the ideal equality of the sensations called forth by i_1 and i—the equality gained by the distribution of r, f and z. Let S_I denote the portion of T which lies above this point of equality, and S_{II}, that which lies below it. Then, according to Müller, the z-cases will be uniformly distributed in T on either side of the equality-point; so that the threshold of difference[2] is $S_I = S_{II} = \frac{T}{2}$. Lorenz reckoned judgments of

[1] r = right, f = wrong, z = doubtful and equal judgments.

[2] Wundt, following Fechner, makes S_I and S_{II} partial thresholds, T the total threshold. To S_I corresponds the decrease of D (the stimulus-difference, $i_1 - i$) by a value equivalent to the magnitude of S_I; to S_{II}, the increase of D by a value equivalent to the magnitude of S_{II}.

equality, when i_1 and i were objectively different, as f-cases; but Prof. Kraepelin rightly points out that the psychological moments in such a judgment are essentially different from those which characterise wrong judgments properly so-called. He himself proposes a modification of the method, which had been independently suggested by Prof. Jastrow;—the exclusion of z-judgments altogether. Objectively equal stimuli not being employed, the reagent is simply required to decide in each case which of the two given impressions is the stronger.

Those who have worked much with the method of right and wrong cases will, I think, be exceedingly distrustful of this innovation. The previous state of consciousness (expectation) exerts a very large influence on the judgment. I have often noticed that a stimulus-difference which lay beneath the threshold would appear considerably increased, and one which lay above it considerably diminished, if the expectation were wrongly directed before the experiment took place. It is exceedingly easy always to give the judgment "greater," even when objectively equal stimuli are employed; but the psychological conditions are essentially altered, and a constant error imported into the results, by the exclusion of z-cases.[1]

Starke's research on the measurement of strength of sound is a continuation of previous work. Within the limits of experimentation it was again found that the law of proportionality between intensity of sound and height of fall, where the fall-weight is constant, and between intensity of sound and fall-weight, where the height of fall is constant, is valid. Deviations from it, noticed by other observers, are explained by neglect of various sources of error.[2]

[1] Wundt, *Phys. Psych.* i. pp. 353-5; Kraepelin, "Zur Kenntniss der psycho-physischen Methoden," *P. S.* vi. 493-513; Lorenz, "Die Methode der richtigen und falschen Fälle in ihrer Anwendung auf Schallempfindungen," *P. S.* ii. pp. 430 ff.; Jastrow, "A Critique of Psycho-physical Methods," *American Journal of Psychology*, i. 277-291.

[2] The law, $i = cwh$—which is only empirically valid—has been discussed by Prof. Cattell, MIND, xiii. p. 42. Starke, "Zum Mass der Schallstärken," *P. S.* v. 157-169. *Cf.* his original article, "Die Messung von Schallstärke," *P. S.* iii. pp. 264 ff. The investigations into psycho-physical method carried out by Merkel ("Abhängigkeit zwischen Reiz und Empfindung," *P. S.* iv. 541-594, v. 245-291, 499-557) and Higier ("Experimentelle Prüfung der psycho-physischen Methoden im Bereiche des Raumsinnes der Netzhaut," *P. S.* vii. 232-297) I hope to deal with, in a future article, in connexion with Prof. Angell's work, "Untersuchungen über die Schätzung von Schallintensitäten nach der Methode der mittleren Abstufungen" (*P. S.* vii. pp. 414-468). I must also leave undiscussed here the article by C. Lorenz, "Untersuchungen ueber die Auffassung von Tondistanzen" (*P. S.* vi. 26-103), and the controversy between Wundt and

(*b*) *Quality.* Dr. Kirschmann begins his article on the sensibility to light (*Helligkeit*) in indirect vision with a record of experiments upon the functional quality of the *fovea centralis* and of the lateral parts of the retina. It was found that, while neither taken alone is at all exact, central vision surpasses lateral as regards clearness and quality of the stimulus; while lateral vision has the advantage as regards its intensity.

The objective brightness of the retinal image decreases from centre to periphery; or, in other words, the quantity of reflected light which affects the lateral parts of the retina during fixation is less than that which reaches the *fovea centralis.* One would, therefore, expect that laterally seen objects would appear less bright than those centrally seen. That this is not the case can be proved in many ways. Thus, an uniformly bright surface, the centre of which is fixated, is seen as uniformly bright. A glowing platinum-wire, just visible with direct fixation, is clearly seen in indirect vision (Aubert). Dim stars are better made out when indirectly than when directly observed. Differences in the brightness of an illuminated surface are more easily recognised in indirect vision. In the same way, the outer rings of a Masson's disc are more certainly distinguished (Helmholtz). After-images in the lateral portions of the retina are more intense, and last longer than those which result from direct stimulation.[1] A white disc, so covered with grey glasses as to be, if directly observed, just below the threshold, becomes visible if indirectly observed. The alterations undergone by laterally seen colours are not those of decrease in brightness, but rather those of increased intensity; red becomes orange; violet, blue. A rotating disc, composed of black and white sectors, which just fuses to grey for direct fixation, shows the succession of black and white when indirectly regarded: *i.e.*, the sensibility to quick movement is greater in the lateral parts of the retina than at the centre.

Dr. Kirschmann proceeded to determine the quantitative relations of sensibility to light for the different portions of the retina. He found that its increase with distance from

Stumpf which has arisen out of it (Stumpf, *Zeitschrift für Psychologie*, i. 419 ff., ii. 266 ff., 438 ff. Wundt, *P. S.* vi. 605 ff., vii. 298 ff. *Cf.* Engel, *Zeitschr. für Psych.* ii. 361 ff.). The discussion would, of course, belong to the second division of the paragraph dealing with Sensation.

[1] This point requires confirmation. If the rule is as stated, there are certainly exceptions.

the centre is far more considerable along the horizontal than along the vertical meridian; on the intermediate meridians it was more or less irregular. The upper half of the retina is more sensitive than the lower. As regards the anatomical question, he sees in the cones of the *fovea centralis* organs, whose main function is that of distinguishing; in the rods of the lateral parts, organs especially sensitive to light.

An appendix discusses the results obtained by A. E. Fick; independently of which Dr. Kirschmann had worked. The greater difference which the former observer found, between the centre and lateral portions of the retina, is to be explained by the fact that he employed the adapted (rested) eye, and just-perceptible stimulus-intensities.[1]

An investigation by the same author, into the qualitative relations of simultaneous light- and colour-contrast, is introduced by an interesting discussion of the phenomena of pseudo-contrast; of cases, *i.e.*, in which the physical conditions of illumination are the sole or partial cause of the observed effect. Such phenomena are the coloured halo, which in certain circumstances surrounds a shadow; or the greater brilliancy of green upon a red ground, as compared with red seen upon green. Coming to simultaneous contrast proper (the form of contrast which results, simultaneously with stimulation of certain parts of the retina, in other not contiguous parts which are not stimulated), Dr. Kirschmann distinguishes an intensive and extensive side of the phenomenon. Intensively, the strength of light-, colour- and saturation-contrast depends on the degree of illumination of the objects regarded; while that of colour- and saturation-contrast stands further in relation to the colour-tone and degree of saturation of the contrasting surfaces. Extensively, the strength of simultaneous contrast in general depends on their extent, and distance from one another and from the eye. The general experimental results (for which, by the way, finality is not claimed) were as follows. Simultaneous colour-contrast contains two elements,—the influence of each contrasting surface upon the other,—the quantitative relations of which vary inversely with, though not in a strict proportion to, the degree of saturation of the two colours. It is, therefore, strongest when the latter are in a state of mean saturation; with as complete exclusion of light-con-

[1] Kirschmann, "Ueber die Helligkeitsempfindung im indirecten Sehen," *P. S.* v. 447-498. Fick, "Studien ueber Licht- und Farben-empfindung," *Pflüger's Archiv*, xliii. pp. 441 ff.

trast as is possible. Simultaneous contrast between a colour and a grey of like brightness (*Helligkeit*) increases, probably in a logarithmic relation, with the saturation of the inducing colour. The intensity of simultaneous contrast in general varies inversely with the extension of the contrasting surfaces. The intensity of light- and, probably, of colour-contrast is directly proportional to the linear extension of the inducing retinal surface.[1] Of especial interest is the author's conjecture that the phenomena of colour-contrast in general are reducible to terms of light-contrast. This point he promises to discuss in a future paper.

Recognising the necessity, for the above contrast-experiments, &c., that "white" and "black" should be more than indefinite terms, Dr. Kirschmann devised an apparatus for determining their quantitative relation. He took as unit of measurement the brightness of ordinary white card; and employed for his comparison various "black" surfaces, and different methods of illumination. The same card painted with "Paris black," *e.g.*, gave a brightness of $\frac{1}{60}$, in the light of a paraffin lamp; of $\frac{1}{58}$ in gaslight; and of $\frac{1}{57}$ in diffused daylight.[2] Dr. Kirschmann has also found it possible to produce monochromatic light,—red, green, and blue,—by combinations of thin aniline-dyed gelatine plates. The discovery has proved a most useful one for many experiments in the department of physiological optics.[3] A series of careful photometrical determinations of the relative brightnesses of "light" and "dark" surfaces is made the basis of a fifth article, which deals with the importance of a correct handling of contrast in art,—principally in painting. The main body of the paper is taken up with a discussion of light-contrast; but a word is also said upon colour- and saturation-contrast, upon lustre, and upon the tone of feeling attaching to simultaneous contrast in general. The introduction deals with the three moments which influence an appreciation of a work of art: the quality of the artist's work, its position and surroundings, and the mental furniture of the spectator. The author points out and illustrates the mistakes that arise from putting knowledge into sensation. He writes throughout easily and with sound

[1] Kirschmann, "Ueber die quantitativen Verhältnisse des simultanen Helligkeits-und Farben-contrastes," *P. S.* vi. 415-492.

[2] Kirschmann, "Ein photo-metrischer Apparat zu psychophysischen Zwecken," *P. S.* v. 292-300.

[3] Kirschmann, "Ueber die Herstellung monochromatischen Lichtes," *P. S.* vi. 543-551.

optical knowledge ; but treats his subject-matter too lightly, and with insufficient regard of the mass of existing literature.[1]

Finally, there is to be noticed here Schischmánow's research on the purity of harmonic intervals. In his *Tonpsychologie*, Prof. Stumpf arranges these in the following series, according to the degree of fusion of their constituent tones : (1) octave ; (2) fifth ; (3) fourth ; (4) thirds and sixths; (5) seventh; (6) second, &c. Assuming (what is very doubtful) the persistence of this order for the corresponding intervals outside the octave, he formulates a law of tone-fusion, in a form analogous to that of Weber's law. Schischmánow, whose reagents judged of the purity of the interval from successive tuning-fork tones, obtained (within the octave) the series : (1) octave ; (2) fifth ; (3) fourth ; (4) greater sixth ; (5) greater third ; (6) lesser third ; (7) second ; (8) lesser sixth ; (9) lesser seventh ; (10) greater seventh. This is evidently comparable with Stumpf's results ; the higher place occupied by the second being referable to the musical training of the reagents : since the second is an interval of very frequent occurrence. Wundt's law, that the judgment of purity depends on the coincidence of partial-tones, was thus in general confirmed. Other interesting results of Schischmánow's work are the facts that our sensibility to difference is greater for decrease of intervals than for their increase ; and that the raising of a tone is more readily perceived than its lowering.[2]

(*c*) *Tone of feeling*. Dr. Scripture's note on " Idea and

[1] Kirschmann, " Die psychologisch-æsthetische Bedeutung des Licht- und Farben-contrastes," *P. S.* vii. 362-393. Dr. Kirschmann's theory of painting is a combination of æsthetic Idealism with psychological Realism. This seems to me to represent a purely mechanical eclecticism : and, even as such, it is not consequently carried through. For if one is to take one's optical knowledge to the criticism of a picture, why not one's physical ideas in general ? The fulfilment of his ideal Dr. Kirschmann sees in the Sistine Madonna. He takes no umbrage at the sight of a woman standing on a cloud : though he is hurt if a full moon subtends a visual angle of more than half-a-degree. But, indeed, a school of art which strictly satisfied the requirements of Profs. du-Bois Reymond and Norman Lockyer would be no more than a curiosity. Art must submit to a compromise between scientific exactness and the æsthetic needs of the average man, who is neither physicist nor physiologist.

[2] Schischmánow, " Untersuchungen ueber die Empfindlichkeit des Intervallsinnes," *P. S.* v. 558-600. Stumpf, *Tonpsychologie*, ii. pp. 135, 139. Stumpf's law is $m : n.\ 2^{\times}$ (where $\times$ is a small whole number, and m and n vibration-rates of the component tones ; m being $< n$).— The work of Schischmánow was published before the second volume of the *Tonpsychologie* appeared.

Feeling" was suggested by the outcome of certain of his experiments on Association, to be mentioned below. It was found that when, *e.g.*, a colour was presented to the reagent, the first link in the chain of reproduction was often not an idea, but a feeling. The question at once presents itself, whether feeling is, as much as idea, an independent psychical element; or whether there are in consciousness only ideas and their relations. The former alternative is that accepted, *e.g.*, by Lotze and Wundt; the latter represents the position of Herbart, Lipps, Münsterberg, that idea and feeling are inseparable sides of one and the same process. To the consideration of these views Dr. Scripture brings the following facts. A feeling was sometimes associated directly to the sense-impression, without the intermediation of an idea; sometimes the association was that of an idea possessing a strong tone of feeling; in the majority of cases an idea alone arose in consciousness. A feeling can of itself alter the train of reproduction. In nineteen cases out of every twenty-one the idea which followed the associated feeling led directly back to the sense-impression. Of this last fact more presently.

These considerations show that both of the views stated above must be modified. The former regarded feeling as an independent process. It is so, in so far as it can enter alone into the fixation-point of consciousness. The second laid it down that idea and feeling are two sides of the same process: they are rather two sides of mental life in general. Or, to combine both truths: feeling and idea are co-ordinated partial-phenomena of the train of mental processes, necessarily and always interconnected. But the degree of consciousness may vary; so that either may be apperceived separately, as well as both together: while, independently of this, either or both can influence the train of ideas. This latter fact, though correct, is not proved by Dr. Scripture's experiments. And generally confirmatory of Wundt's view as his results are, they would not by any means present an insuperable difficulty to those who hold the opposite theory. For a relation between ideas can be apperceived as easily as the ideas themselves.[1]

III. *The Formation of Ideas.* The psychophysic of sensation is unfortunately not yet so far advanced that we can hope, for some time to come, to see the foundations laid of a psychophysic of ideation. Some small beginnings have been

[1] Scripture, "Vorstellung und Gefühl. Eine experimentelle Untersuchung ueber ihren Zusammenhang," *P. S.* vi. 536-542.

made in the way of experiments upon tone-fusion (Stumpf's view and definition of which, however, undoubtedly require modification), but the science is almost as much a blank here as it is, too, in the sphere of feeling.—Two articles call for notice under this head.

By the 'apparent size' of an object is usually understood the size of the visual angle which it subtends. Dr. Martius uses the expression, not quite happily, to denote our judgment of the relative size of objects which are at different distances from the eye. Following a method of experimentation suggested by certain observations of Fechner's, he inquires what magnitude, at different distances, appears equal to a normal magnitude at a constant distance; and finds that the former increases, though very gradually, with the distance. Increase of the normal magnitude is accompanied by increase of the absolute difference between it and the magnitude which, at a given distance, appears equal to it, though it is probable that the relative difference remains approximately constant.—More experiments are wanted. The method of minimal changes was alone employed; it should be tested by that of right and wrong cases. The constancy of the relative difference between the magnitudes compared, when the distances are constant, is a tempting assumption, but one hardly established by Dr. Martius' results.

The decrease of the apparent size of an object, with increase of its distance from the eye, cannot be a function of the size of the retinal image, as the size of objects in general is. For the former decrease takes place much more slowly than the latter. Doubling the distance halves the size of the retinal image, while fivefold increase of distance in one of Dr. Martius' experiments decreased the apparent length of a rod by only one-fortieth. He further adduces a number of facts to prove that the same retinal image, projected to different distances, corresponds to space-images of different sizes, their increase being approximately proportional to the distance.

It is not clear that Dr. Martius is not here confusing a purely psychological process on the one hand with a purely physical fact on the other. In any case, the immediacy and certainty which he claims for "size-sensations" or size-ideas cannot be granted to him on the strength of this one investigation. The empiricist will still hold with Hering that the seeing of objects which are given equal in sensation as different is a secondary process. The apparent size of objects, at different distances, is the result

of a compromise, so to speak, between sense and experience.[1]

In a short paper on the definition of *Vorstellung*, Dr. Scripture argues from Wundt's standpoint that the specific character of an idea, genetically considered, is its unity; an unity consisting in cohesion and interconnexion of parts. This is, of course, to be distinguished from that unity which the idea owes to apperception, and which, therefore, does not characterise those ideas which are only perceived. The latter is the common use of the term in Wundt's psychology, and it is a pity that Dr. Scripture has found it necessary to employ the same word with a different meaning.[2]

IV. *Consciousness and the Train of Ideas.* (*a*) *Consciousness.* A common misunderstanding of Wundt's theory of apperception represents the latter as a power independent of conscious content, and acting upon it from without. A controversy with F. Schumann upon the question of the extent of consciousness is made the occasion of a definite statement as to the use of the term in the *Physiologische Psychologie*, in face of which error should hardly be able to arise in the future. Consciousness is, according to Wundt, a collective expression for all conscious content,—ideas, feelings, excitations of will, &c.,—and nothing beyond this.—It is the service of Herbart to have drawn a strict line of division between the two main characteristics of the inner experience, which Leibniz had brought together: the possibility of the renewal of past processes, and the graduation of the objects of perception in respect of clearness. Their severance led to the notion of a limit of consciousness; and so to that of its experimental determination. The first method was that of giving the momentary stimulus of a row of letters, figures, &c. But in this way it is the extent of apperception, and not that of consciousness, which is determined. An obvious improvement consists in giving two successive stimuli (alike or partly different); it being the task of the reagent to judge of their likeness or unlikeness. But the method is again unsatisfactory; for a chance direction of the attention upon some one part of the impression-complex might considerably influence the results. To avoid this, the components of the stimuli might themselves be successively presented to consciousness; and best

[1] Martius, "Ueber die scheinbare Grösse der Gegenstände und ihre Beziehung zur Grösse der Netzhautbilder," *P. S.* v. 601-617.

[2] Scripture, "Zur Definition einer Vorstellung," *P. S.* vii. 213-221. Külpe, *P. S.* v. 428.

in the form of a series of sounds. Here the controversy begins.

Wundt lays it down that we can only judge immediately of the qualitative or quantitative similarity or dissimilarity of two complex sense-presentations, when each of them has been present in consciousness as a simultaneous whole. He maintains that this is the case with serial sound-impressions; as is shown, firstly, by the almost irresistible tendency to group them rhythmically; and, secondly, by the fact that a limit is soon reached at which immediacy and certainty of judgment as to their likeness or unlikeness ceases. In the moment in which the stimulus ends, *i.e.*, its whole complex is present in consciousness. This Schumann denies, on the ground of self-observation; but, unfortunately, without giving the time-relations of his experiments. His view is, that a serial group of similar impressions can be taken up into the memory, with its number-characteristics; and that the reagent, in comparing two such groups, involuntarily reproduces the group first memorialised along with the second group; and, therefore, comes to each separate stimulus with expectation, till the whole number becomes equal to the number of stimuli in the first group. Here, therefore, it is denied that expectation persists; while Wundt finds this to be the case. It is a matter of self-observation against self-observation.

It is, however, hard to find confirmation of Schumann's view in the known laws of reproduction. If a series of similar sounds, $a, b, c, d, \ldots$ is followed by a like series, $a^1, b^1, c^1, d^1, \ldots$ why should a^1 call up the image of a alone, apart from those of b, c, d? Wundt's explanation of the process of immediate comparison as depending on the accompanying feeling is probably correct; though this feeling would seem to be not merely the rhythmical feeling, but a complex,—certainly containing feelings of strain.[1]

(*b*) *Reaction-time.* Prof. Cattell, writing in 1888, declared that "the [simple] reaction is at first voluntary, but with practice the process becomes reflex, and the time shorter". The experiments of L. Lange on hearing and touch, in part published in the *Phil. Studien* of the same

[1] Wundt, "Ueber die Methoden der Messung des Bewusstseinsumfanges," *P. S.* vi. 250-260; "Zur Frage des Bewusstseinsumfanges," *P. S.* vii. 222-231. Feelings of strain accompany all acts of attention, according to Wundt's exposition in the *Phys. Psych.*; *cf.* ii. p. 240. Schumann, *Zeitschr. für Psych.* i. pp. 75 ff., ii. pp. 115 ff. *Cf.* Höffding, *Vierteljahrsschr. für wiss. Phil.* xiv. Schumann's general theory of *Erwartungsspannung* seems very questionable.

year, showed conclusively that differences in reaction-time are not to be so explained. The direction of the attention was proved to be the variable which had expressed itself in the results of different observers. All simple reactions could thus be grouped in three classes: the sensorial, in which the attention is directed exclusively upon the sense-impression; the muscular, in which it is concentrated on the reaction-movement; and intermediate forms, in which there is vacillation.

Lange was not content to state that the processes were qualitatively different, without giving some further analysis. Unfortunately, he attempted this from the side of anatomy and physiology, without testing his conclusions psychologically, as the law of psychophysical Parallelism would require. None the less, his discussion is suggestive; and must be touched on here, that the further course of theory may be understood.

The sensorial reaction, on Lange's view, may be schematised differently, according as the sense-impression is preceded or not preceded by a signal. In the former case, the apperception is active. The sense excitation, on arriving at its centre, meets with an excitation proceeding from the apperception-centre; perception and apperception are, therefore, simultaneous. In the latter case, the apperception is passive.

In the case of the muscular reaction, we must take into account the (previous) voluntary innervation of the group of muscles concerned. The excitation will then follow a reflex path from sense-organ to muscle-group, without touching the centre of apperception. In the lower reflex centre C there is laid up, in unstable equilibrium, a store of potential energy, derived (as actual energy) from the centre of innervation. This lower centre Lange places conjecturally in the cerebellum.

No theory of the muscular reaction is adequate, which does not account for its premature and false forms. The latter of these is explained by the instability of the lower centre: an excitation proceeding from an irrelevant sensory surface is sufficient to upset its equilibrium. For the former we must assume that C is in connexion with corresponding central sense areas. The excitation connected with a stimulus-idea arising in one of these might travel to C, and so produce a motor discharge before the advent of the appropriate sense-excitation.

Next in order comes Dr. Martius' investigation into the nature of the muscular reaction. The first part of this is

occupied with a criticism of the experiments published by Dr. Münsterberg in pt. i. of his *Beiträge*. Dr. Münsterberg, adopting Lange's view that the muscular reaction is a brain-reflex, seeks to show that it is applicable in the case of compound reactions (reactions involving an act of choice, &c.). Dr. Martius' results, on the other hand, point unmistakably to the conclusion that the direction of the attention upon the reaction movement has here a retarding, not an accelerating, influence upon the whole process, where there has been no previous practice on the part of the reagent; while no constant difference between sensorial and muscular times is to be found after such practice has taken place. The reaction process was felt to demand least effort if the attention was directed upon the sense-impression (word spoken), or on the co-ordination of the category with the corresponding muscle-group ("town" with "second finger," *e.g.*). This latter form,—the most natural in compound experiments, for which there has been no practice,—Dr. Martius proposes to term the "central" reaction; the adjective denoting here, as in the other two cases, the direction of the attention immediately before the experiment.

The second division of the article deals with the question whether the simple muscular reaction is a brain-reflex, as Lange supposed, or a process in which consciousness is involved. Wundt, without discussing the matter in detail, accepted the former explanation as adequate for the extreme form of the ordinary type of muscular reaction,—the reaction of a practised or "educated" observer. His reasons were, in the main, those already adduced by Lange; *i.e.*, the occurrence of premature and false reactions. Now the former of these, Dr. Martius points out, proves nothing for the reflex-theory. It is certainly itself not a reflex, for there is no sense-stimulus in the case, while it bears an exact resemblance to the true muscular form. The inference is, of course, that the latter is also no reflex. False reactions, again, tell directly against the theory; for it is most improbable that the wrong stimulus should give rise to an intended movement, without the participation of consciousness. The perception of the stimulus, which, according to Wundt, accompanies the reaction-process, is thus made essential, as it is adequate, to its explanation. Dr. Martius notes that the time required for the reaction is three times as long as that of a cord-reflex.[1]

[1] Some hypnotic reactions would seem to be really brain-reflexes. *Cf.* Onanoff, "De la perception inconsciente," *Archives de Neurologie*, Mai, 1890.

But what of the test of inner observation? Is one's impression of the simultaneity of his perception of the stimulus and response thereto trustworthy? The answer must be negative. For this impression of simultaneity can exist in cases where the attention is sensorially directed; and the evidence of the so-called complication experiments refutes it.[1] It remains, therefore, to give a positive explanation of the phenomena other than that put forward by Lange, and (with reservations) accepted by Wundt. For this, direct experimentation is necessary. A series of reactions was obtained, without previous practice, from various observers, who were required to control the research by noting down (1) the direction of their attention at the moment of reaction, and (2) their judgment of the result of each experiment and of its relative duration. Four variations of the ordinary method were employed. To do away with all possible objections, the observers were directed to react sensorially "as quickly as possible," *i.e.*, without waiting for a full and clear apperception of the sense-impression which served as stimulus. A time-difference between muscular and sensorial results showed itself from the outset.

The difference must, then, be a consequence of the difference in direction of attention, a difference in the central portion, as opposed to the centripetal and centrifugal portions, of the whole process. Alteration in the central conditions is not, however, identical with the disappearance of the central terms in the reaction series. The necessary concentration of attention upon the movement is an act of consciousness. The necessary perception of the stimulus differs from its apperception (as all perception from all apperception) only in its degree of clearness, and in the time it requires. The shortness of the muscular reaction is due (1) to the preparedness of the movement, and its consequent more rapid completion; and (2) to its earlier commencement, the stimulus-idea not needing to become clear in consciousness, and the attention not having to pass from this to the idea of movement.[2]

The third contribution to the theory of the simple reaction process is furnished by Dr. Külpe, in his articles on simul-

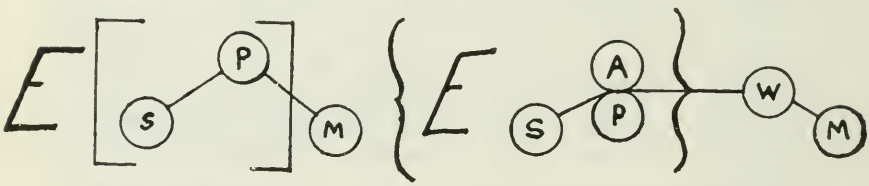
[1] *Cf.* von Tchisch, "Ueber die Zeitverhältnisse der Apperception einfacher und zusammengesetzter Vorstellungen, untersucht mit Hülfe der Complicationsmethode," *P. S.* ii. pp. 603 ff. Dwelshauvers, "Untersuchungen zur Mechanik der activen Aufmerksamkeit," *P. S.* vi. p. 247. Dr. Külpe has shown that our whole consciousness of simultaneity in co-ordinated voluntary movement is a false one, *P. S.* vi. pp. 514 ff., vii. pp. 147 ff.

[2] The variations noted in the times of muscular reaction are significant as emphasising the importance of the act of perception of the stimulus.

taneous movement. Taking Lange's results and views as his starting-point, Dr. Külpe proceeds to ask the question whether the quality of the preceding psychophysical disposition is indifferent for the time-relations of the various forms of motor response to stimulus. The first set of experiments,—which, as was to be expected, led to far wider issues than that immediately under consideration,—consisted of two-handed reactions (muscular, sensorial, prepared voluntary, and unprepared voluntary). The results were unexpected. It was found that right-handed persons did not necessarily react first with the right hand; that the numbers of first right-handed and first left-handed movements did not compensate one another in the total; that the difference between the two hand-movements varied from 0σ to 30σ; that one hand, as a rule, was favoured during each series of experiments; and that the amount of deviation from simultaneity depended essentially on the nature of the reaction.

We must attempt to explain these facts, says Dr. Külpe, by a psychological theory of reaction, and not in Lange's way. The foregoing state of consciousness, consisting (qualitatively speaking) in expectation,—*i.e.*, in the apperceived idea of a more or less definite process,—is a factor of great importance. The more complete the correspondence between our expectation, and the act of movement or stimulation, the more complete is the preparation for the reaction.

The transition from any one conscious content to any other is facilitated (1) by the fact of relationship between the two, and (2) by a favourable state of feeling. In the two forms of simple reaction, the relationship is very close. The difference between them is, that in the muscular form the direction of the attention leads to fusion of the idea in expectation with the last term of the series; while in the sensorial, this fusion is that of expected phenomenon and first term. Add to this, to explain the difference in duration, the unpleasantness of prolonged expectation in relation to the muscular reaction; which gives its movement a mechanical, reflex nature. We may now schematise the processes as follows:—



Muscular Reaction. Sensorial Reaction.

E = Expectation.

Premature reactions are explicable as reactions to memorial representations of the stimulus; false reactions as being the answer to the thought "I have to react to *a* sense-impression".

To return to the experimental results. The deviations from simultaneity may be classed as constant and variable. The constant preference of one hand requires further experimental investigation; while the fact that the mean deviation is less in muscular than in sensorial reactions finds its explanation in the greater variability of the factors in the latter case. As regards the foregoing psychophysical disposition itself, it was observed that there always exists a rivalry between the determination to react simultaneously and the idea arising in consciousness from the direction of the attention.

In the second article are communicated experiments upon the constant deviations from simultaneity already referred to. A method *per exclusionem* was followed. (1) Variations of the sense-impression gave no answer to the main question. It is interesting, however, to notice that the concentration of attention is facilitated if signal and impression are (qualitatively or quantitatively) different; that the intensity and sharpness of the impression influence the reaction-time; and that the general bodily position seems to be of importance. (2) Alteration of the sensations proceeding from the organs of movement (by ether, ice, induction-shocks) gave no results. (3) Variations of the attention, on the other hand, proved to be of influence. The preference of one hand is probably to be explained by the accidental direction of the attention. Alteration in sensation is, naturally, an aid to such preference. In the sensorial reaction, less uniformity in the idea of the reaction-movement is attainable than is the case in the muscular: hence the fact that the mean variation of deviation from simultaneity in the former is higher than that in the latter form. The third part of Dr. Külpe's investigation is as yet unpublished; further experimentation having been found necessary.[1]

A second research by Dr. Martius on the length of reaction to clangs of different pitch falls under this general head. Wundt had laid it down that since no constantly different

[1] Lange, "Neue Experimente ueber den Vorgang der einfachen Reaction auf Sinneseindrücke" (i)., *P. S.* iv. 479-510. Martius, "Ueber die muskuläre Reaction und die Aufmerksamkeit," *P. S.* vi. 167-216. Külpe, "Ueber die Gleichzeitigkeit und Ungleichzeitigkeit von Bewegungen" (i)., *P. S.* vi. 414-535; (ii)., *P. S.* vii. 147-168.

effects had been obtained by qualitative variation of the stimulus, in the domain of the three senses which admitted of exact investigation (sight, hearing and touch), such differences might be considered as being too small to require consideration, in the face of other influences.[1] The experiments which Dr. Martius instituted led him, however, to the conclusion that the reaction-time to clangs lying within the six octaves C' and c'''' decreases continuously with increase of the number of vibrations; being in the neighbourhood of c'''' no longer than the reaction-time to noise. The form of reaction employed was that empirically determined as the easiest: an intermediate form, in which the attention was directed exclusively on the sense-impression, but the movement followed "as quickly as possible" (*i.e.*, before its apperception).[2] This general result appeared to confirm the views of Exner, von Kries, and Auerbach, that a considerable but definite number of vibrations (about ten) is necessary for the excitation of the organ of perception. When, however, this number was calculated for various clangs, it was seen that the theory did not hold good.[3] There remained the supposition of Pfaundler and Kohlrausch that only two to five vibrations are necessary to produce a tone-sensation. Dr. Martius offers an alternative theory, based upon variations in the rapidity of the centripetal and central excitation-process, which must be assumed to differ in accordance with the different rapidity of the impulses.

The investigation, therefore, establishes the fact that the duration of the perception of tones is, within wide limits, a function of their rates of vibration. This is proved both by the continuous decrease of the reaction-time with the heightened pitch of the clangs, and by the absence of any variable, other than the vibration-rates, in the reaction-process. It is to be regretted that a larger number of experiments was not made; and that the influence of

[1] *Phys. Psych.* ii. p. 284.

[2] *Cf.* above, p. 18.

[3] Thus, for Dr. Martius himself, the numbers for C', c', c''' and c'''', instead of being approximately equal, were 2, 9, 31 and 47 respectively. The results were very different for the different observers; the increase of the number of vibrations with the height of the tone occurring only in this case.—In his latest paper, Dr. Martius admits Prof. Stumpf's objection, that these results (which are gained from a comparison of the reaction-times to noise and tone) may be invalid. He therefore attempts the calculation of the number of vibrations from intercomparison of reaction-times to tone alone. The outcome is not satisfactory; and one must reserve judgment until the point has been specially investigated.—*P. S.* vii. 484 ff.

practice was not determined. Considering the accuracy and simplicity of the method which Dr. Martius followed, one is disappointed at the scantiness of his results.[1]

In his review of this research, Prof. Stumpf takes exception to many points; and in especial raises the objection that the relative intensities of the stimulus-tones were not sufficiently taken into account and controlled. To the discussion of this point Dr. Martius devotes a third paper. Precisely formulated, the question at issue has two sides: it is—whether the absolute stimulus-threshold is lower for high than for deep tones; and whether the objective strength of the stimulus influences the time of reaction. For strength of stimulus is not to be regarded as equivalent to intensity of sensation; and the stimulus was kept constant in the experiments communicated in the first article.

Fresh experiments, in which five stimulus-intensities were employed, led to the unexpected conclusion that for a practised observer the strength of the clang had no effect on the length of reaction-time. Hitherto all observers were agreed that (within certain limits) the time of reaction decreases with increasing strength of stimulus. Wundt, judging from the mass of undifferentiated material which lay to hand, decided that the decrease was very small, so long as the form of reaction remained the same; and that a purely physiological explanation was possible. Dr. Martius' more exact experimentation proved, however, that the general proposition is not unconditionally true; that, at least for the ear, impressions of different intensity are, within wide limits, reacted upon in the same time. Neither does he assent to a physiological explanation of the lengthening of the time of response to weak impressions. Perception is here more difficult, and the co-ordination of impression and reaction-movement slower. In the neighbourhood of the threshold it is probable that no amount of practice or concentration can overcome these influences.[2]

Dr. Dwelshauver's work upon the mechanics of attention is, unfortunately, too fragmentary to be of much use as material for theory. The author set out to investigate the question of the influence on the reaction-process of a signal, given at a definite interval before the sense-stimulus; but was unable to fulfil his intention. He found that the

[1] Martius, "Ueber die Reactionszeit und Perceptionsdauer der Klänge," *P. S.* vi. 394-416.

[2] Martius, "Ueber den Einfluss der Intensität der Reize auf die Reactionszeit der Klänge," *P. S.* vii. 469-486. Stumpf, *Zeitschr. f. Psych. u. Phys. d. Sinnesorgane*, ii. 230-232. Wundt, *Phys. Psych.* ii. 286.

advantage obtained by the use of the signal was, in general, greater for the sensory than for the muscular reaction-form. Some of the minor observations are interesting ; as, *e.g.*, that the reagent's judgment of the length of his reaction is subject to the general psychological law of contrast.[1]—An as yet incomplete research by H. Leitzmann deals with the alterations in the length of the apperception-process dependent on the time-relation in which secondary stimuli (of the ear) and a primary stimulus (of the eye) stand to one another after their perception. It is interesting as being the work of a trained astronomer.[2]—In order to test the influence of practice on mental processes, Dr. Berger determined the time required for reading a certain number of Latin and German words by members of the different classes in a gymnasium, and by pupils of a preparatory school. He found the time to diminish with practice, at first very rapidly, then more slowly. Within his experimental limits, it never became entirely stationary. Control-experiments proved that this increased facility was in reality dependent for the main part upon practice, and but to a small extent upon general mental progress. The process of reading Dr. Berger analyses into a simple reaction, and an act of association. Upon the duration of a simple reaction we know practice to have no effect ; and we are, therefore, led to explain the experimental results as referring, almost exclusively, to the central process of association. By "practice" it becomes gradually possible to apperceive simultaneously a large number of separate impressions in their logical connexion, phrases taking the place of words and the still earlier syllables.[3]

Finally, reference may be made here to Prof. Leumann's article on the relations of mental activity to breathing and circulation ; in which a special application is given to Wundt's general caution as to the choice of reagents.[4]

[1] Dwelshauvers, "Untersuchungen zur Mechanik der activen Aufmerksamkeit," *P. S.* vi. 217-249. Dr. Dwelshauvers has published his results, together with a statement of Wundt's theory of apperception, in book form ; under the title "Psychologie de l'Apperception et recherches expérimentales sur l'Attention" (Brussels, 1890).

[2] Leitzmann, "Ueber Störungserscheinungen bei astronomischer Registrirung" (i.), *P. S.* v. 56-95.

[3] Berger, "Ueber den Einfluss der Uebung auf geistige Vorgänge," *P. S.* v. 170-178.

[4] Leumann, "Die Seelenthätigkeit in ihrem Verhältniss zu Blutumlauf und Athmung," *P. S.* v. 618-631. In defence of the English anthropometrical method, according to which the reagent is directed to execute

(*c*) *Association.* · Dr. Scripture's work on the associative train of ideas is a notable contribution to the experimental literature of association. The author's aim was the accumulation of factual material, on the ground of which the problems and laws of association could be formulated anew. He made no time-measurements; the investigation of the qualitative relations of the train of ideas to the object of sense being his special theme.

The observer sat in a dark chamber, and was subjected to light-, sound-, touch-, smell-, and taste-stimuli. In the first case, the light-impressions (picture, word, colour) appeared before him on the wall of the chamber, and lasted four seconds. At any moment within this time-limit he could describe his association. The advantages of the method are stated as follows: (1) The condition of consciousness before experimentation was approximately constant; the train of ideas being interrupted in every case by the "Now!" of the experimenter. (2) Disturbing perceptions were excluded by the darkness and quiet. (3) The series of reproduced ideas could be exactly controlled and reported by the observer. The results led Dr. Scripture to the formulation of four irreducible processes as comprised in the act of association: preparation, influence, expansion, after-effect. Preparation is the process whereby an idea becomes capable of exerting an influence upon the content of consciousness: its origin lies outside consciousness. The influence is not necessarily exercised; the prepared idea may disappear without effect. In Fechnerian language preparation is thus, more or less, a passing of the threshold. Influence takes place when an idea causes an alteration in conscious content, with or without interruption of the stream of thought. Expansion consists in the addition of ideas (or constituent parts of ideas) to an idea (or parts of it) already present. Sometimes ideas which have disappeared from consciousness exercise an influence on its later content.

The material illustrative of each process cannot here be dealt with. But especially to notice are two cases, in which the influence of unconscious ideas on reproduction is considered. The first of these is that of mediate reproduc-

the reaction-movement "as quickly as possible," it may be said that the reaction-time of 'real life' is probably obtained thereby in the great majority of cases. Lange pointed out that a natural preference of the muscular, sensorial, or mixed form goes along with difference of temperament (*P. S.* iv. 496). The times could be classified under these three heads, by comparison with the norms established by a more exact experimentation.

tion. An idea, it is maintained, is able to call up another idea, with which it is unconnected, if each has been at some time connected with a third idea, not now in consciousness. Thus, there is shown to the observer a Japanese word-symbol together with the word written in Latin characters ; and, after some time, the same symbol with the corresponding German word. If, later, either of the written words alone is presented to him, the other is associated with it, without the conscious intermediation of the sign. Only in "favourable" cases were good results obtained by this method. Often there was no reproduction, or a wrong one, or the symbol recurred in consciousness. If all cases were counted, $\frac{r}{f} = 1{\cdot}155$; if those in which the symbol was possibly recurrent were excluded, $\frac{r}{f} = 2$. These numbers, besides proving the general position stated above, show that the general effect of the intermediate (unconscious or half-conscious) idea is much weaker than that of an apperceived idea. The second case to be noticed is that of after-effect. Can a not-perceived constituent of a complex idea have so great an after-effect that, if it alone is later perceived, it can call up the whole idea? A picture was shown to the observer, together with some simple object (colour, letter) in indirect vision. The exposure time was so short that he knew no more than that he had seen *something* indirectly. When the principal picture had been recognised, the secondary object was given alone, in direct perception ; and the observer stated on what principal picture he had first thought. Thirty-four per cent. of the reactions were correct.

A theoretical discussion of the results the author reserves for a future article. Meantime, it is plain that the four basal processes above referred to are logical and not psychological. Logically, they can be separated ; psychologically, they overlap one another. Moreover, the observer's inner experience was, to some extent, neglected to save the processes. Objection might also be taken to the experimental method. Dr. Scripture deals only with the reproduction occasioned by sense-perception. By lengthening the association-time, he might have also obtained results in pure ideational reproduction. The sense of sight was unduly preferred ; that of smell, so important for association, unduly neglected. Again, the picture was exposed for the whole four seconds. It is possible that we have here the explanation of the fact that the associated feeling led back to the sense-

impression. In other respects, the four seconds' limit has no great claim to reality, for the observer could speak when he chose.

Neither can it be admitted that Dr. Scripture's experiments have succeeded in erecting mediate reproduction to a general law, possible or probable as the process may be, on other grounds. The only guarantee that, when the second pair of impressions p x is given, the idea of the former pair d x is not immediately associated with them, is the memory of the observer; and this cannot be always reliable. Theoretically, too, there seems no reason for the disappearance of x, unless it be that a Japanese symbol is difficult to reproduce. It was found that with complicated geometrical figures there was no reproduction; while, if the intermediary was a simple colour, it invariably recurred in consciousness.[1] As regards the experiments upon after-effect, a purely physiological explanation is possible. The object seen in indirect vision would excite a brain-process, even if it did not form part of conscious content at the time. The re-excitation of the same process by the later direct vision of the object would then bring with it a reproduction of the original direct perception. There need be no question of the influence of the idea, half-conscious or unconscious, of the object indirectly seen.

Dr. Scripture's great service to the psychology of association is that he has broken ground in the way of exact experimentation. No criticism of the positive results of his research can, of course, effect the value of this service. His criticism of the present association-psychology is interesting and acute; but final judgment cannot be passed before the appearance of the promised theoretical discussion.[2]

The object of Lehmann's two articles is less the explanation of the phenomenon of recognition, as such, than the determination of the number of the fundamental laws of association; and, in particular, of the claim of the law of Similarity to hold its place beside the law of Contiguity. Höffding, following Hamilton, J. S. Mill, and Bain, had

[1] It is a pity that Dr. Scripture has not given the numerical relations of his results in more detail. Could we compare directly the percentage of cases in which mediate reproduction occurred with the percentage in which the symbol undoubtedly recurred in consciousness, a judgment of probability would be possible.

[2] Scripture, "Ueber den association Verlauf der Vorstellungen," *P. S.* vii. 50-146. Mr. Galton is the founder of the experimental psychology of association: *Inquiries into Human Faculty*, pp. 185 ff. But valuable as his results are, his method was not sufficiently exact.

declared Similarity to be the primal law ; and the facts of recognition to be the best proof of this. Every reproduction by contiguity is preceded by a primitive similarity-association. He drew a distinction from the outset between immediate and mediate recognition. The former occurs when a sense-impression (*e.g.*, a spoken word) appears to us as known, without our being able to give any reason for our knowledge of it ; *i.e.*, when no other ideas arise in consciousness to explain the fact of its identification. Here it is impossible for an association by contiguity to have taken place. Rather does the spoken word call up the idea of its previous occurrence ; and to this attaches the quality of recognition. The idea fuses immediately with the present perception, and there are no other free ideas present in consciousness to bring about the association. We have a reproduction by similarity. Mediate reproduction occurs, on the other hand, when the idea of previous occurrence, called up by the spoken word, is a free idea beside the present perception. Thus is effected a primary association, on the foundation of which secondary contiguity-associations may arise.—Rather a difference of degree, one would think, than of kind.

Lehmann replies by a theoretical discussion of the laws of association. "Forms" and "laws," he points out, are not interchangeable terms. That the similarity-form occurs is undoubted ; but is similarity the cause of the reproduction? The decisive question is, whether there are facts which compel us to accept the law of similarity, or whether the law of contiguity is adequate to the explanation of the phenomena. If this latter is the case, the law of contiguity must be unhesitatingly adopted, for association by contiguity is certainly not explicable in terms of similarity ; and the logical law of parsimony directs the rejection of needless hypothesis. Höffding found the facts he required in the process of recognition, but his assumption of the original similarity-association, which precedes all contiguity-association, depends on a misapprehension. For no state of consciousness recurs ; but a state, completely or partially identical with a former state, may be induced by a present perception : and in this way there may arise contiguity-associations which effect the recognition.

Höffding rejoins, with justice, that Lehmann's experimental method was not exhaustive. The only recognition-process investigated was that for which consciousness had been already prepared by expectation, and the question of immediate recognition was not touched. To which Lehmann replies by a series of important experiments upon the recog-

nition of the smell of chemical compounds, &c. All stages of recognition,—from the "immediate" form up to express identification, with localisation in time and space,—proved to be explicable by the law of contiguity. Especially interesting are the intermediate cases, in which the manner of the associations only became clear to the observer after some thought, or upon suggestion from the experimenter. Lehmann concludes convincingly that there can be no recognition without reproduction by contiguity.[1]

At this stage of the discussion Wundt intervenes with a comprehensive article. He points out that of the two theories which alone remain in the field, the one of which refers all association to contiguity, while the other calls in the aid of similarity as well, the former has the methodological advantage. All explanation of the laws of association must proceed from the fact that the forms in which it is given are complex processes, intelligible only in the light of the elementary processes whose products they are. This thought is implicit in the controversy between Höffding and Lehmann; for both recognise the necessity of setting out from a consideration of recognition. But neither of them has carried it consequently and radically through.

The elementary processes to be considered are those of complication and assimilation; more especially the latter. Complication forms the basis of the successive association of disparate ideas; assimilation that of the successive association of ideas within the same sense-sphere. Wundt takes the latter only, and analyses out from it the ultimate associative processes.

Two elementary processes (*Verbindungsvorgänge*) are to be found in that of assimilation. (1) Those constituents of a perception, which previously have been often perceived, call up the constituents which are identical with them (*Verbindung des Gleichen*). (2) Through the intermediation of the latter, other constituents are called up, which are absent in the given impression, but which previously were in temporal and spatial connexion with the intermediaries.

What are, then, the so-called similarity- and contiguity-associations? The second elementary process is plainly the most essential factor in the latter form. On the other hand, association by similarity cannot be explained in terms of the

[1] Höffding, *Psychologie in Umrissen*, pp. 152-3. *Cf.* his four articles in the *Vierteljahrsschrift für wissenschaftliche Philosophie*, 1889; especially pp. 433 ff. Lehmann, "Ueber Wiedererkennen," *P. S.* v. 96-156; "Kritische und experimentelle Studien ueber das Wiedererkennen," *P. S.* vii. 169-212.

first elementary process ; for similarity implies partial difference, as well as partial identity. And in the first process we were dealing only with the calling up of the identical constituents. As a matter of fact, both ground-processes enter more or less into the formation of all complex association-forms ; and every complex association is explicable as product of the two processes. If the results of the first process are in the foreground of consciousness, the product is a similarity-association ; if those of the second, an association by contiguity.

Wundt goes on to show that the different stages of recognition investigated by Lehmann and Höffding form a transition between simultaneous and successive association. They make clear the temporal disjunction of the constituents of the former. The importance of recognition for the explanation of association lies partly here, and partly in the fact that in it the *conditions* of the process of disjunction can be examined.

The article concludes with a discussion of Herbart's *frei steigende Vorstellungen*. The possibility of their occurrence is denied.[1]

(*d*) *Emotion.* The importance of Wundt's essay on the Emotions, which contains much more than is promised by the title, has been recognised on all hands. Many readers of the *Phys. Psych.* must have felt that while Sensation and Will came then to their full rights,—the one because of the prevalent direction of psychophysical investigation, the other through the apperception-theory and the discussions which it has called forth,—Feeling occupied a more or less subordinate place in the whole system. This is, of course, in part conditioned by the nature of the case : the feelings, and the psychical processes which are developed from them, are of all conscious content the most elusive and difficult of derivation. Wundt's present exposition falls under three heads : (1) a historical survey of German terminology ; (2) Feeling and Emotion ; (3) Emotion, Impulse, and Will. In the second section it is shown how empirical psychology avoids the errors of the extremists,—of intellectualism on the one hand, and physiology on the other. Simple mental processes can neither be defined nor derived. It is as wrong to look for the origin of feeling in primitive operations of thought as to regard the emotions as "disturbances of muscular innervation, arising by way of reflex". Feeling and Emotion are described and distinguished ; feeling being the

[1] Wundt, "Bemerkungen zur Associationslehre," *P. S.* vii. 329-361. The question of an original similarity, in Höffding's and James's sense, apart from partial identity, is not discussed by Wundt.

simple, pleasurable or painful state (simple in respect of quality, not necessarily—as is the case with sensation—of origin also) experienced when consciousness is relatively undisturbed; emotion the more complex condition, which is characterised by an interruption (favourable or inhibitory) of the course of ideation. Emotion has, moreover, certain physiological concomitants, which themselves react upon it, rendering it in a still more complicated state. The disturbance of the train of ideas is the consequence of an act of apperception; the quality of the apperceived object, or the manner of its affection of consciousness, occasioning the strong excitation of feeling. This relation of Emotion to Apperception is the key to the fact of the expression of the emotions in external movements, and the consideration of these tends (through a short criticism of adverse psychological theory) to the third section.

The latter opens with a restatement of the author's theory of Will as simple, original mental process. The common derivation of will from feeling, through desire, is referred to an inadequate analysis of conscious content. In the actual operations of will, feeling and volition are inseparably connected; and it is owing to the greater intensity of the direction of will in such a complex process that the simple Impulse arises. There may, however, be present in consciousness many feelings and different directions of will. In such a case, either a labile equilibrium results; or, if one impulse is the strongest, yet not strong enough actively to overcome those opposed to it, Desire; or, finally, if this stage is passed, voluntary action or "choice". After a discussion of the psychology of choice, and a reminder to the reader that the simple processes disclosed by analysis are artificial products, the article concludes with a detailed criticism of Dr. Münsterberg's theory of volition.[1]

(*e*) *Disturbances of consciousness.* The question whether light or heavy sleepers dream more was made the subject of statistical inquiry, in Mr. Galton's way, by F. Heerwagen. Humanity was divided, for the purpose of the investigation, into men, women, and students.[2] The general results obtained were as follows :—

[1] Wundt, "Zur Lehre von den Gemüthsbewegungen," *P. S.* vi. 335-393. *Cf.* MIND, xvi. p. 302; *Zeitschr. für Psych.* ii. 316-321. Special attention may be called to pp. 387-8 of Wundt's essay. Here occurs the most definite statement of his position as regards *Innervationsempfindungen*; a statement which, but for facts to the contrary, one would have supposed unmistakable.

[2] Students were arranged in a separate class, as affording especially good material for observation, owing to uniformity of life, age, condition, &c.

(1) With increase of age, sleep becomes lighter and dreams fewer. Children, however, dream but little, if at all; the maximum of dream-frequency being reached between the ages of twenty and twenty-five. The curve of sleep does not, as might be expected, run parallel to the dream-curve, but in a straight line : sleep becoming steadily lighter from childhood onwards. (2) The intensity of dreams increases with their frequency. (3) Frequent dreaming and light sleep vary together, but not proportionally. A deep sleep is attended with but small decrease of dream-frequency. (4) The more frequent the dreams, and the lighter the sleep, the better is the waking memory of them. Women form a possible exception to this rule; though their sleep is light, not much of dreams is remembered.

There is a very great difference between the sexes. Women sleep more lightly and dream more than men. In men, the frequency of dreams has no influence on the duration of sleep; whereas this influence is very large in the case of women,—sleep with much dreaming lasting, on the average, an hour longer than dreamless sleep. Much dreaming brings with it, for women, the necessity of a longer period of sleeping (*e.g.*, of day-sleeping). Women who are light sleepers require half-an-hour less sleep than heavy sleepers. On the whole, women's sleep is more interrupted than men's. A suggested reason for this difference is that women can gratify their inclination in the matter of sleep more easily than men. The majority of men in question represented themselves as feeling tired on waking, the women not.

Factors in the general result are the time required for getting to sleep, the interruptions of sleep, the ability to sleep at will, mental disposition during the day, nervousness (which is greater in women than in students, and in students than in men), temperament, occupation.[1]

V. *Will.* It is impossible in the space now at command to give a satisfactory account or criticism of Dr. Külpe's chapters on the place of Will in modern psychology. Dr. Külpe, himself a follower of Wundt, passes in critical review the chief theories from the time of Herbart downwards; concluding with an especially clear and valuable exposition of Wundt's view. He emphasises the fact that the latter is strictly empirical. When we have analysed out the constituents of Sensation-complex and Feeling from conscious content, we are left with a something, which has for its

[1] F. Heerwagen, "Statistische Untersuchungen ueber Traüme und Schlaf," *P. S.* v. 301-320.

chief attributes spontaneity and unity. This 'something' is the primitive activity of will,—apperception: as much a part of conscious content as is "blue" or "pleasant". Again, Wundt makes apperception the content of the self-conscious Ego: but self-consciousness originates partly in a sum of ideas which possess the character of permanence, partly in the dependence of these upon our volition. Gradually the half-sensible, half-conceptual constituents fall away; and apperception alone takes their place.

I propose to take notice of one portion only of Dr. Külpe's work,—his discussion of the relation existing between apperception and feeling. In support of Wundt's theory of feeling, as set forth in the *Phys. Psych.* (that it arises as the reaction of apperception upon sense-impressions), Dr. Külpe gives four reasons. Firstly, in feeling of all kinds we are conscious of a greater spontaneity, or inner activity, than is the case in perception, and this spontaneity is one of the distinguishing characteristics of apperception. Qualities of sensation we ascribe to objects without us, and this although many sensations outlast the original external stimulation: but this is never done with tones of feeling. Secondly, both will and feeling are blunted by exercise, in the sense that the voluntary act becomes automatic (the idea that was once apperceived failing very soon to excite attention), the positive or negative feeling indifferent. Thirdly, perception always implies a corresponding stimulus; feeling is (at least in developed mental life) bound up with dispositions of consciousness, which have their history. The same holds of apperception. Fourthly, the most common forms of volition are so naturally and nearly connected with the feelings of pleasure and pain, that trouble is required to separate the two elements. Aversion and desire seem to the inner perception to be simple processes. On the other hand, the object (or idea) which excites these states of mind is comparatively unimportant.

The feelings of sense,—pleasure and pain,—are the most frequent motives to voluntary action. It is plain that apperception stands also in close connexion with the elementary æsthetic feelings, which depend on the temporal and spatial relations of ideas; and also with the intellectual feelings, which accompany the apperceptive association of ideas, and so appear as its immediate effects. So is it with emotion. In the simplest case, an emotion is called forth by the action of an unexpected stimulus upon consciousness. The stimulus is unexpected when the apperception has not been adapted to it, so that it makes its way by force to the mental fixation-point. An emotion may also be called into being, if the stimulus has been apperceived, but is so strong as

quickly to exhaust the apperception. Finally, impulses are distinguished from emotions by the fact that in them external movements enter into the service of the emotional excitations.

This short review may give some idea of the immense importance in Wundt's psychology of his theory of volition, and of his view of the constant interaction of two out of the three ultimates of mental analysis. In the sphere of sensation we are on better-known and surer ground, so that the function of apperception there need not be discussed.[1]

The brief review of psychological researches published in the *Philosophische Studien*, which it was the aim of the present paper to give, is now concluded. It must be remembered that the *Studien* has a threefold function to perform: firstly, as the organ of Wundt himself; secondly, as the place of publication of the best philosophical work done under his direction; and, thirdly, as a journal of experimental psychology,—principally, of course, for the Leipsic laboratory. Several articles, some of considerable importance, have, therefore, been passed over in the above survey.[2] When the number and quality of the remainder are taken into account, together with the fact that the *Studien* forms only one out of many serial publications devoted mainly or exclusively to experimental psychology, it seems a not unreasonable hope that there will exist, in the near future, a body of knowledge sufficient to justify the claim of the science to independence. The names of psychologists will gradually be subordinated to that of the field in which they have worked: and the establishment of a Professor of Psychology as a natural science, beside the Professors of Physics and Physiology, will then be a matter of course.

[1] Külpe, "Die Lehre vom Willen in der neueren Psychologie," *P. S.* v. 177-244, 381-446. The reader of the above paragraph will have been reminded of Wundt's relationship to Lotze.—In comparing this article with that of Wundt on the Emotions, it must be remembered that, in his psychology, the words "will" and "apperception" have a twofold meanmg,—(1) as indicating a primitive mental activity, and (2) as expressing the complex states derived from this in different directions.

[2] I subjoin the names of these for the sake of completeness. (1) *Systematic Philosophy.*—Wundt, "Ueber die Eintheilung der Wissenschaften," *P. S.* v. 1-57. "Biologische Probleme," v. 327-380. "Was soll uns Kant nicht sein?" vii. 1-49. (2) *Logic.*—Brix, "Der mathematische Zahl-begriff und seine Entwicklungsformen," v. 632-677, vi. 104-166, 261-334. (3) *Theory of Knowledge.*—Reichardt, "Kant's Lehre von den synthetischen Urtheilen a priori in ihrer Bedeutung für die Mathematik," *P. S.* iv. 595-639. Külpe, "Das Ich und die Aussenwelt," i., vii. 394-413. (4) *Ethic.*—Schubert, "Adam Smith's Moral-philosophie," vi. 552-604. (5) *Miscellaneous.*—"Drei Briefe von Johann Friedrich Herbart," v. 321-326. Wundt, "Zur Erinnerung an Gustav Theodor Fechner," iv. 471-478, 640.

IV.—THE LOGICAL CALCULUS. II.

By W. E. Johnson.

General Aim of the Paper. In offering an exposition of the Logical Calculus, my aim is not to add one more to the numerous systems of notation and symbolic method that have already been worked out more or less independently, but rather to bring out some underlying principles and assumptions which belong equally to the ordinary Formal Logic, to Symbolic Logic, and to the so-called Logic of Relatives. I hope at the same time to be able to present the work of different writers on different branches in a more systematic and comprehensive form than has hitherto been done. My results and methods coincide in their general bearing with those of the writers who have done most for Symbolic Logic. But in a general review of the opinions of others, I am obliged to urge, somewhat at length, what seem to be errors. Dr. Venn has probably done more than any other writer to present the Boolian Calculus in a philosophic form; while Mr. Peirce and Dr. Mitchell have made the most important extensions or simplifications. And I shall follow very closely some of the methods of the two latter writers.

In working out formulæ I have tried to keep clearly in view the distinction and relations between the intelligent and the non-intelligent processes involved. Only in this way can we properly appreciate both the power and the limitations of the Calculus. As a matter rather perhaps of detail than of principle I wish to urge the importance of treating the synthesis of unanalysed propositions before that of analysed propositions. There are several grounds for this order of treatment. Unanalysed propositions may be synthesised on principles independent of the analysis of the proposition, as is exemplified in the treatment of the pure hypothetical, alternative, or disjunctive arguments which, in ordinary logic, culminate in the various forms of the Dilemma; while, conversely, the analysis of quantitative propositions (and *a fortiori* the synthesis which follows from this analysis) is dependent on the general principles of propositional synthesis. Again, by the procedure that I propose, we pass by a natural transition from ordinarily quantified propositions to the Logic of Relatives, and thus reach more

and more complex forms in the order of their complexity. But a stronger ground for my method is that we are led on, not only to more and more *complex* forms, but also to more and more essentially disputable and difficult questions in carrying out this order of treatment. In brief, my justification for the plan adopted is that it is throughout *analytic*.

The Principle of Formal Inference. The principle of formal inference is expressed in the formula "(*b* and *c*) implies *c*": *i.e.*, a conclusion, formally reached, is simply a determinant of the data expressed in the premisses. In the sense in which factorisation is said to be the inverse of multiplication, formal implication is the inverse of determinative synthesis. This principle reduces the *Dictum de omni et nullo* to its barest and most tautological form. When we infer from *all*, *i.e.*, A_1 and A_2 and . . . to a particular A_1 contained in the *all*, we recognise the *all* as a condensed determinative synthesis within which the determinant A_1 is contained. But a distinction may be made between immediate and mediate inference. In so-called mediate inference, two or more premisses are given to be determinatively synthesised, although the conjunction *and* is generally unexpressed. This determinative synthesis may be put into a new form, in which we detect a new determinant not contained in either of the original premisses taken separately. Mediate inference thus includes two parts: *first* a synthetic and *secondly* an analytic operation. The process is, therefore, identical with that by which we combine 6 and 4 as factors, and in their product detect a new factor 8 which was not contained in either of the original factors. Of course there is a *selective* act involved in the choice of the determinant which we take as our conclusion. We do not realise the omitted determinants in the same act of apprehension by which we select the determinant needed. But none the less must we recognise the conclusion to *be* a determinant of the data. It is this characteristic which marks off formal from non-formal inference. In the latter the conclusion does not appear as a mere determinant of the premisses:—the grounds of our inference are not explicitly formulated. This broad distinction will be indicated by representing *non-formal* implication by a merely *operational* symbol, and formal implication by a *partial* equivalence, as will be explained in the next section.

Notation for Propositional Synthesis. As determinative synthesis has always been represented by multiplication, we shall use the symbol $a \,.\, b$ to stand for '*a* and *b*'. The reciprocal relation between *and* and *or* forcibly suggests the use

of the symbol $a \cdot b$ to stand for 'a or b'. For the purposes of the present article such a notation will be found useful, and I shall venture to adopt it in the simple formulæ that will be introduced, although I feel strongly the objections that may be urged against any arbitrarily imposed notation. The separate constituents a, b, are called the *determinants* of the determinative synthesis $a \,.\, b$, and the *alternants* of the alternative synthesis $a \cdot b$. I shall not introduce any other symbols, except such as are naturally suggested or derived from these. Thus from the symbol of equivalence $=$, we may derive two others expressing *partial equivalence*. If a *determinant* is dropped from one side of an equivalence we may use the symbol $= \ldots$ defined by the convention $b \,.\, c = \ldots c$. If an *alternant* is dropped, we may use the symbol $= \cdot\cdot\cdot$ defined by the convention $b \cdot c = \cdot\cdot\cdot c$. These symbols merely indicate the omission of a determinant or alternant. The calculator will, therefore, understand by the symbol $a = \ldots c$ that "a contains c as a determinant," and by the symbol $a = \cdot\cdot\cdot c$ that "a contains c as an alternant": *i.e.*, $a = \ldots c$ means $a = b \,.\, c$ and $a = \cdot\cdot\cdot c$ means $a = b \cdot c$ where the b has been dropped.

It will be observed that, if the equivalence $a = b \,.\, c$ is given on the authority of Formal Logic, the partial equivalence $a = \ldots c$ may be *interpreted* as meaning "a formally implies c". And the reciprocal relation between *and* and *or* will show that, if $a = b \cdot c$ is given on the same authority, $a = \cdot\cdot\cdot c$ may be interpreted "a is formally implied by c". And, as I shall only use *formal* equivalences, these interpretations may be always made. But in the mechanical operations of the calculator this interpretation will not be involved. For him, the symbols will mean merely the omission of determinants or alternants dropped for convenience.

In the present paper, I shall not work out any of the rules that may be derived from the fundamental laws of propositional synthesis, as these are familiar to any reader of symbolic logic.

Notation for the Molecular Analysed Proposition. The molecular proposition—which cannot be expressed as a synthesis of more elementary propositions—involves a single (absolute or relative) predication and a number of interconnected individual subjects. I will adopt a simple notation suggested by Mr. Peirce's paper on "The Logic of Relatives" in the Johns Hopkins' *Studies in Logic.* To indicate the different treatment accorded to the subject and predication, the former will be written as a suffix to the

latter.[1] We then express molecular propositions of any order as follows: p_x, p_{xy}, p_{xyz}, p_{xyzu}, &c. These may be taken to represent such propositions as "Coal is produced," "Coal is produced in England," "Coal was produced in England during 1890," "Coal was produced in England during 1890 for fuel". Here x means coal; y England; z 1890; u fuel. Again p means 'is-produced' in every case, but involves also in the several cases the prepositions *in*, *during*, *for*—the interconnexions of which among the different subjects are indicated by their order.[2]

In this notation, we must point out (1) the relative nature of the propositional analysis. The analysis need only be carried out in so far as it affects the succeeding propositional synthesis. Thus any of the four given propositions might be represented by the single symbol p, if the synthesis of p with other propositions did not depend on its analysis. Or, any of them might be represented by p_x, if we only required to recognise the subject x as distinct from other subjects. In this way, of course, p would have fuller import as we pass from one proposition to the next. And this shows that we may drop any subject from the symbol denoting a *proposition*, and what remains will denote the full *predication* for that particular subject. This has some importance in the sequel. We must point out (2) the relative nature of the *molecularity* ascribed to these propositions. For symbolic purposes, all that is meant by calling p_x molecular is that p_x and $\bar{p}_x$ are to be taken as contradictories. Of course, if the subject x contained a quantitative element, p_x and $\bar{p}_x$ would not be contradictories. Hence any latent quantification must be incorporated in the predication. Taking *Coal* as a singular name, standing for a single *sort* of substance, the proposition "Coal is produced" may be taken as contradicting (say) "Coal is a gift of nature". But the contradictory of "All (or some) sorts of coal are produced"

[1] Since we may give a substantive form to the predication itself by constructing an *abstract* name, there would seem to be no need that our symbols should distinguish between predication and subject. Thus *any* proposition might be expressed by a common relative predication "belongs to" which could be always omitted: *e.g.*, mortality *belongs to* Socrates. This expedient would, however, be inconvenient when we had to combine determinatively and alternatively different predications —some affirmatively and some negatively—for the same subject. Even here, a relative predication is required for the expression of the contradictory "does not belong to".

[2] The *order* of the subjects (*i.e.*, their propositional 'interconnexion) need only be considered when we are dealing with subjects belonging to the same category or universe.

is not "All (or some) sorts of coal are gifts of nature". I mention this elementary point in order to show that an apparently molecular proposition may often have to be resolved.[1]

Notation for the Synthesis of Molecular Propositions. The synthesis of moleculars having the same subject is represented by a synthesis of the predications. Using the proposed symbols for *and* and *or*, we write

$$p_x \cdot q_x = (p \cdot q)_x : p_x \dot{\cdot} q_x = (p \dot{\cdot} q)_x.$$

The suffixes are, for the symbolist, mere differentiating marks of propositions, and he need know nothing of the nature of the union expressed by p_x or $(p \cdot q)_x$. In the reverse problem of synthesising moleculars, having the same predication but different subjects, a similar notation might be employed. But this would lead to ambiguity, if we were to compound *both* subjects and predications, or if we were to negate the predication of a compound subject. The form "x and y are p or q" is ambiguous. It might mean one or other of two different statements:—

(1) (x is p and y is p) or (x is q and y is q).
(2) (x is p or x is q) and (y is p or y is q).

The difference is a difference in bracketing; or, as we may say, in the *relative externality* of the syntheses involved. Common speech adopts the convention: "Subjects are externally synthesised and predications are internally synthesised," and would, therefore, give the second interpretation. This at least is clearly the case, when the synthesis in the subject is expressed quantitatively. Thus the propositions:

(1) Every man is knavish or foolish.
(2) Some men are knavish and foolish,

would mean, if M_1, M_2 &c., are the men contemplated,

(1) (M_1 is k or f) and (M_2 is k or f) and &c.
(2) (M_1 is k and f) or (M_2 is k and f) or &c.

Thus the subject-synthesis is external to the predication-synthesis in ordinary speech.[2] Now our symbols must be chosen so as to indicate in every case the relative externality of the syntheses involved. This is the main consideration

[1] Compare, for example, such occasions for fallacy as are supplied by "Epimenides is a liar" or "That surface is red," which may be resolved into "All or some of the statements of Epimenides are false," "All or some of the surface is red".

[2] This convention of language partly accounts for Hamilton's confusions in quantifying the predicate.

in multiple quantification. Adopting the "stop" notation, we are inevitably led on to represent "Every m" by the symbol $\dot{m}$; and "Some m" by the symbol $\grave{m}$. We shall indicate that the range of determination and alternation is the same in the universal and particular, by giving the simultaneous definitions

(1) $m_1 . m_2 . m_3 \ldots m_\infty = \dot{m}$; (2) $m_1 \cdot m_2 \cdot m_3 \cdots m_\infty = \grave{m}$.

The propositions "Every m is p or q," "Some m is p and q" are written $\dot{m}(p \cdot q)_m$ and $\grave{m}(p . q)_m$. These are to be read, "For every m, it is true that *that* m is p or q": "For some m, it is true that *that* m is p and q": and thus the externality of the substantive synthesis is indicated in our notation.[1] In the simplest cases the suffix may be omitted without danger of ambiguity, but the necessity for this complete notation will be seen when we come to complex multiple quantifications.

The well-known rule for expressing the contradictory of a compound proposition is: Replace each constituent proposition by its contradictory and each *and* by *or* and conversely. Hence

$\dot{m}p_m$ is contradicted by $\grave{m}\bar{p}_m$:
and $\grave{m}p_m$ is contradicted by $\dot{m}\bar{p}_m$.

Finally, any proposition having a predicatively defined subject, may be reduced to a form in which the subject appears as a common universe of subjects. Thus, "Every subject, that is p, is q" and "Some subject, that is p, is q" become

$\dot{m}(\bar{p} \cdot q)_m$ and $\grave{m}(p . q)_m$ respectively,

in which the internality of the predication-synthesis and the externality of the subject-synthesis are made manifest.

The Synthesis of Singly-quantitative Propositions. We have to combine universals and particulars alternatively as well as determinatively. This seems to have been first definitely recognised by Dr. Mitchell [*Studies in Logic*, p. 78]. This writer's work seems to me to contain the most important simplification of the Boolian Logic that has appeared. The results of this section have been suggested to me by his work. By the introduction of *alternative* syntheses and by the adoption of the *affirmative* form of the universe-propositions (instead of Boole's negative form), he is enabled both to simplify and to extend the range of logical

[1] This mode of symbolism is only an abbreviated form of the Mathematical symbols Σ and Π; and is equivalent to that used by Mr. Peirce on p. 200 of the *Studies in Logic*.

symbolism in a most suggestive way. The following six formulæ are nearly the same as those given [on p. 78] by Dr. Mitchell. As we are dealing with the same range of subjects, we may omit the *suffix*.

1. The Determinative synthesis of Universals.

$$Formula: \ (\dot{m}p) . (\dot{m}q) = \dot{m} (p . q).$$

2. The Alternative synthesis of Particulars.

$$Formula: \ (\dot{m}p) \cdot (\dot{m}q) = \dot{m} (p \cdot q).$$

3. The Determinative synthesis of Particulars.

$$Formula: \ (\dot{m}p) . (\dot{m}q) = \cdots \dot{m} (p . q).$$

4. The Alternative synthesis of Universals.

$$Formula: \ (\dot{m}p) \cdot (\dot{m}q) = \ldots . \dot{m} (p \cdot q).$$

5. The Determinative synthesis of Universal and Particular.

$$Formula: \ (\dot{m}p) . (\dot{m}q) = \dot{m} (p . q) . \dot{m}q.$$

6. The Alternative synthesis of Particular and Universal.

$$Formula: \ (\dot{m}p) \cdot (\dot{m}q) = \dot{m} (p \cdot q) \cdot (\dot{m}q).$$

Formula (1) (from which the others are derived) gives the important, though obvious, rule: "Universals may be determinatively combined without loss of force into a single universal". This was one of the principal results attained by Boole; though he obscured its simplicity by the negative form into which he transformed his propositions. The formula is *proved* in precisely the same way as the distributive law in the Algebra of Integral Numbers: *e.g.*, $(a + b) \times 3 = (a \times 3) + (b \times 3)$. In fact, just as multiplication is a condensed addition, so is universal quantification a condensed determinative synthesis. The analogy is more than superficial. Provided, then, we are dealing with *determinative* propositional synthesis only and with *universal* quantification only, the quantification $\dot{m}$ may be omitted: and the *predications* may be combined just as unanalysed propositions are combined. This obvious result partially accounts—in my view—for Mr. Peirce's treatment of the universal and the hypothetical as identical logical forms. At least, I should hold that only in this limited case is the identification formally valid; and that the limitation prevents our accepting any such identification as fundamental.

The first four formulæ give the rule: "A determinant or alternant of any proposition may be found by taking a determinant or alternant of the predication". This simple result

arises from adopting Dr. Mitchell's plan of expressing propositions in the affirmative form. Formula (5) shows how a more determinate particular conclusion arises from the (determinative) combination of a universal and particular premiss. The three formulæ (1), (3), (5) for determinative synthesis thus cover the ground of the ordinary syllogistic combination of two premisses.

Formulæ (2), (4), and (6) relate to Alternative Syntheses. Now an alternative may be expressed as a hypothetical; and, since it is in reference to hypotheticals that discussion has arisen, I will examine these in their hypothetical form.

2. Some S is p if every S is q = Some S is p or Some S is $\bar{q}$. This *is equivalent* by (2) to

Some S is (p or $\bar{q}$) = Some S is (p if q).

4. Every S is p if some S is q = Every S is p or Every S is $\bar{q}$. This, by (4), *formally implies*

Every S is (p or $\bar{q}$) = Every S is (p if q).

6. Every S is p if every S is q = Every S is p or Some S is $\bar{q}$. This, by (6), *is formally implied by*

Every S is (p or $\bar{q}$) = Every S is (p if q).

By contraposition the above hypothetical = Some S is $\bar{q}$ if some S is $\bar{p}$ = Some S is $\bar{q}$ or Every S is p, which of course gives the same result.

Summing up for hypotheticals:—

2. A universal antecedent and particular consequent *is equivalent to* a particular categorical.

4. A particular antecedent and universal consequent *implies* a universal categorical.

6. A universal antecedent and consequent or a particular antecedent and consequent *is implied by* a universal categorical.

Now Dr. Venn—without distinguishing these three cases of the hypothetical—regards form (6), *viz.*, "(Every S is p) if (every S is q)," as equivalent to the universal categorical "Every S is (p if q)"; *i.e.*, "Any S that may be q is p" [see forms is a distinction of *bracketing*. Thus:—

Symbolic Logic, p. 274]. The distinction between the two

(Every S is p) if (every S is q) = (S_1 is p and S_2 is p), &c., if (S_1 is q and S_2 is q, &c.).

Every S is (p if q) = (S_1 is p if S_1 is q) and (S_2 is p if S_2 is q), &c.

As formula (6) shows, the former *is implied by* the latter, but not *vice versâ*. For the former is consistent with the assertion "Some S is $\bar{p}$ q," which contradicts the latter.

The essential differences between the three hypothetical forms and between either of these and the universal categorical may be illustrated by common examples. But it is necessary to point out that the logical force of the word *some* when used in the *antecedent* of a hypothetical is expressed by the word *any*. To indicate the correctness of the rules for the different forms into which a hypothetical may be thrown, and to bring out its exact force, I shall give to each its two contrapositive forms. Let us consider, then, the several positions that might be maintained by a supporter of compulsory vaccination.

The most timid defender would use form (2) thus:—

If all are unvaccinated, some will have small-pox = If none are to have small-pox, some must be vaccinated. This, by formula (2), is equivalent to the particular categorical: There are some who must be vaccinated or they will have small-pox.

On the other hand, the boldest would use form (4) thus:—

If any are unvaccinated, all will have small-pox = If any are to be free from small-pox, all must be vaccinated. This, by formula (4), *implies:* All who are unvaccinated will have small-pox. But it is clear that the hypothetical here means *much more than* the universal categorical.

But the most probable position for the defender of compulsory vaccination to take is expressed in form (6) thus:—

If any are unvaccinated, some will have small-pox = If none are to have small-pox, all must be vaccinated. This, by formula (6), *is implied by:* All who are unvaccinated will have small-pox. But it is clear here that the hypothetical *does not mean as much as* the universal categorical.

These illustrations fulfil the requirements of Dr. Venn's universal categorical form. For no assumption is made that there *are* any persons unvaccinated either in the categorical or in the hypothetical forms. When Dr. Venn says that he interprets the categorical as a *hypothetical*, he only means that he does not *assume* the existence of the subject-term. But this does not render the assertion hypothetical. The assertion of non-existence which remains is made *categorically*—not on the supposition of any other proposition. It is true that we may write the categorical: "(Even) if there *are* any unvaccinated persons, (yet) there will be no unvaccinated persons free from small-pox". But the antecedent here is superfluous, because its contradictory would formally imply the consequent. Hence the same meaning is expressed by the categorical assertion of the consequent by itself.

The above examination shows the necessity of distinguish-

ing the *conditional* form: "If any S is q, *that* S is p" = Every S is (p if q)," in which the conjunctive synthesis is external to the hypothetical synthesis, from the *hypothetical* form: "If every S is q every S is p," in which two universals of independent import are hypothetically synthesised so that the conjunctive synthesis is internal to the hypothetical synthesis. This—the simplest case—directly leads on to multiple quantifications. Thus take Dr. Venn's example (p. 329): "If the English harvests are bad, the American corn-dealers will gain". It is obvious that this is not a *hypothetical* at all. It does not combine two propositions of independent import: but it identifies all the *years* in which one phenomenon occurs with some of the *years* in which another phenomenon occurs. It means: "Every year in which the English harvests are bad is a year in which American corn-dealers gain"; or contrapositively: "Every year in which American corn-dealers do not gain is a year in which the English harvests are not bad". Of these two contrapositive forms for expressing the proposition as a categorical universal, the former is the more direct and natural, the latter is alone used by Dr. Venn. His symbols will not allow the former, because they assume that the terms "English harvests," "bad," "American corn-dealers," and "gainers" are *fundamenta divisionis* of one and the same universe of years or cases. But the terms "bad" and "gainer" are predications qualifying the substantives "harvest" and "corn-dealers" which belong to an altogether different category from that of years. We are here, in fact, in face of a multiple quantification, in which different categories of things are combined by relative predications. This further analysis that we may make is only necessary in so far as we require subsequently to combine the given proposition with others, in which harvests in general or businessmen in general are brought into relation with years in general. The analysis above given—in which merely *years* are divided according as the English harvests are bad or not and according as the American corn-dealers are gainers or not—would be sufficient for simpler purposes. This again illustrates the principle that our propositional analysis is relative to the needs of subsequent synthesis.

Transition from the Synthesis of Unanalysed Propositions to Multiple Quantification. An unanalysed proposition is of a single type, say l. Two propositions l and l' may be combined determinatively or alternatively. Thus we have the *two* forms:—

$$(1)\ l.l'; \quad (2)\ l \cdot l'.$$

Now suppose that the propositions l, l' are differentiated by referring to different subjects. Thus let l mean "x_1 is lovable" and l' mean "x_2 is lovable". Taking an aggregate of subjects—combined determinatively or alternatively—in the forms $x_1 . x_2 . \ldots . x_\infty = \dot{x}$ and $x_1 \cdot x_2 \cdot \ldots \cdot x_\infty = \dot{x}$, we arrive at the *two* singly-quantified types :—

$$(1)\ \dot{x}l_x\,;\ (2)\ \dot{x}l_x.$$

These mean respectively, "All x's are lovable," "Some x's are lovable". Again combining, determinatively and alternatively, two such propositions of similar type, we have the *four* forms :—

$$(1)\ yl_y . yl'_y\,;\ (2)\ yl_y \cdot yl'_y\,;\ (3)\ \dot{y}l_y . \dot{y}l'_y\,;\ (4)\ \dot{y}l_y \cdot \dot{y}l'_y .$$

Now suppose that the predications l, l' are differentiated by referring to different *second* subjects; so that l means "is loved by x_1" and l' means "is loved by x_2". Then, combining an aggregate of such predications in the above four ways, we have the *four* doubly-quantified types :—

$$(1)\ \dot{x}\dot{y}l_{xy}\,;\ (2)\ \dot{x}\dot{y}l_{xy}\,;\ (3)\ \dot{x}\dot{y}l_{xy}\,;\ (4)\ \dot{x}\dot{y}l_{xy}.$$

These mean, respectively :—

(1) All x's love all y's.
(2) Some x's love all y's.
(3) All x's love some y's.
(4) Some x's love some y's.

Here it is essential to observe that (2) and (3) are of different types. In (2) the alternative synthesis is external to the determinative synthesis. In (3) it is internal. In other words, (2) means "Some *the same* x's love every y": but (3) means "All x's love some *it may be different* y's". Hence these forms cannot be converted without ambiguity. For (2) does not mean "All y's are-loved-by some x's," nor does (3) mean "Some y's are-loved-by all x's". I attempted in my last paper to use the terms "certain" and "some or other" to indicate the distinction required, so as to give an *apparent* possibility of conversion. But this method is perhaps misleading. The forms "All x's love certain y's" and "Some or other x loves all y's" are likely to be misunderstood. For the apparent predication "loves certain y's" is not a real predication, for it would have different meanings in different contexts. And the apparent quantification of the subject "Some or other x" is not a real quantification, for the predication to which it is attached would not necessarily belong to any one subject in the collection x. Out of the four *types* we thus get *six* varieties (in which an x

is lover and a y is loved); *i.e.*, we may add to the four given types:—

$$(5)\ \dot{y}\dot{x}l_{xy} \text{ and } (6)\ \dot{y}\dot{x}l_{xy};$$

where the varieties (5) and (6) are of the same *types* as (2) and (3) respectively. These should be read "Some y's are-loved-by every x," and "Every y is-loved-by some x". All the six varieties may be written with a converse predication symbol $\check{l}$, which would mean *is-loved-by*, and is defined by the equivalence $l_{xy} = \check{l}_{yx}$. But in this transformation the *suffixes* only must be interchanged, *not the order of the quantified terms* (unless these are both universal or both particular). Whether, then, we read the propositions in the form *loves* or in the form *is-loved-by*, we must regard the *externally* quantified term as the true logical subject and what is left when that term is dropped as the predication for that subject. Of course the contradictories of the six varieties may be written down by the rule of interchanging *and* and *or* without violation of the externality and internality of the syntheses. The contradictories, taken in the above order, are:—

$$\dot{x}\dot{y}\check{l}_{xy};\ \dot{x}\dot{y}\check{l}_{xy};\ \dot{x}\dot{y}\check{l}_{xy};\ \dot{x}\dot{y}\check{l}_{xy};\ \dot{y}\dot{x}\check{l}_{xy};\ \dot{y}\dot{x}\check{l}_{xy};$$

showing that pairs of contradictories belong to the types (1) and (4) or (2) and (3).

The four types may be called UU, PU, UP, PP, where U and P stand for universal and particular respectively. The most important question to examine here is the rules for inference *by commuting the order of the quantified terms.* The rules are:—

A. Two similarly quantified terms may be commuted without change of force; *i.e.*,

$$\dot{x}\dot{y}l_{xy} = \dot{y}\dot{x}l_{xy} \text{ and } \dot{x}\dot{y}l_{xy} = \dot{y}\dot{x}l_{xy}.$$

This rule is a direct corollary from the associative and commutative laws.

B. Of two dissimilarly quantified terms, the internal has potency over the external; *i.e.*,

$$\dot{x}\dot{y}l_{xy} = \ldots\ \dot{y}\dot{x}l_{xy} \text{ and } \dot{x}\dot{y}l_{xy} = \cdots\ \dot{y}\dot{x}l_{xy}.$$

In other words, the proposition is more or less determinate according as the more or the less determinate synthesis is *internal* to the other. Thus, "Some x's love all y's" implies "All y's are loved by some x's," but not conversely. This again is a corollary from the Distributive Rules.

Confining ourselves still to a single predicative term, by the same process according to which we found 4 types for the doubly-quantified proposition, we shall find 8 types for

the triply-quantified, and generally 2^n types for the n-ply-quantified proposition. The rules (A) and (B) for commuting the order of two *adjacent* quantified terms will still hold. For the *external* syntheses are always to be regarded as *subject*, and what remains as *predication* to that subject. Hence, using the rule: "A determinant of an (affirmatively expressed) proposition may be found by taking a determinant of its *predication*," the general applicability of the rules (A) and (B) is seen to follow.[1]

Complex Combinations Involving Multiple Quantifications. In the last section propositions containing only one predicative term were introduced. The types that arise when more than one predicative term is introduced are numerous. *All the varieties of type depend on the relative internality and externality of the determinative and alternative syntheses involved.* Perhaps the best way of indicating the gradual growth in complexity is to choose, as far as possible, examples from ordinary speech and science, so as to show how frequent is the use of these complex forms of multiple quantification. The particular form that we choose for symbolising the propositions will depend, to some extent, on the needs of subsequent synthesis. We may take as ultimate subject-term, to which quantification is attached, any term whose applicability to at least one object is assured. Such terms may be regarded as *purely denotative; i.e.*, as reached by a *collective*, not a *selective*, process. On the other hand, a quantified term which is regarded as defined predicatively, must be represented by the substantive category from which its application is selected, as well as a predicative term which determines how the selection is made.

1. Dr. Mitchell gives two simple examples: "During some (the same) part of the year all the Browns were ill," and "All the Browns were ill during some part (or other) of the year". Regarding the name *Brown* as purely denotative, these propositions would be symbolised $\dot{y}b(i_{by})$ and $b\dot{y}(i_{by})$ respectively, in which only one predicative term occurs. But using the predication b to denote *is-named-Brown*, and the substantive category p to denote any *person*, we must distinguish between the absolute predication b, which does not relate to time, and the relative predication i,

[1] The six varieties of doubly-quantified propositions are given by Dr. Mitchell on p. 87 of the *Studies in Logic*. The general formulæ for commuting the quantified terms are given by Mr. Peirce on p. 202. But these two writers have not brought their methods here into connexion. And Dr. Mitchell appears to confine the application of his own method to double quantification, in which *time* is the secondary differentiating mark.

which means "*is ill during*".[1] The two propositions may then be symbolised:—

$$\dot{y}\dot{p}(\bar{b}_p \cdot i_{py}) \text{ and } \dot{p}\dot{y}(\bar{b}_p \cdot i_{py}).$$

The same two symbolic expressions might be interpreted: "There are some young writers (y) who imitate every bad (b) poet (p)," and "Every bad poet is-imitated-by (i) some young writer or other". The forms of synthesis are the same here as in Dr. Mitchell's examples though the substantive categories are different.

2. Dr. Venn's example may be interpreted: "Any year in which all the English harvests are bad is a year in which all the American corn-dealers gain". This might be symbolised:—

$$\dot{y}\{\dot{h}(e_h.\bar{b}_{hy}) \cdot \dot{c}(\bar{a}_c \cdot g_{cy})\}.$$

In this example y means *any year;* in the last example y meant *any moment in the given year.* Of course the degree to which we carry the analysis is arbitrary, and the proposition might be simply written:—

$$\dot{y}(\dot{e}\bar{b}_{ey} \cdot \dot{a}g_a{}^y),$$

where e stands for English harvests and a for American corn-dealers. The important point to observe is that the predications b and g are relative to the year in question.

3. Take the definition of a *circle.* Here we have to express: "There is some point c and some distance r such that every point p is either on the locus l and at distance r from c, or is not on the locus l and is not at distance r from c". This may be symbolised:—

$$\dot{c}\dot{r}\dot{p}\{(l_p \,.\, d_{pcr}) \cdot (\bar{l}_p \,.\, \bar{d}_{pcr})\},$$

where d is the relative predication "is at a distance from—equal to".

4. Let us symbolise that part of Mill's view of causation, which may be expressed as follows: "Taking *any* phenomenon m there will be found *some* phenomenon n which is such that in *any* instance e in which m appears as antecedent n will appear as consequent". This may be symbolised:—

$$\dot{m}\dot{n}\dot{e}(\bar{a}_{me} \cdot c_{ne}).$$

This is the form required for the Method of Agreement.

5. Let us symbolise that other element in Mill's view of causation, which may be expressed as follows: "Taking *any* phenomenon n, *any* instance e in which n appears as

[1] Dr. Mitchell's symbols do not give scope for this distinction.

consequent must have contained *some* phenomenon m as antecedent, which is such that in *any* instance ϵ in which m appears as antecedent n will appear as consequent". This must be symbolised: —

$$\dot{n}\epsilon\dot{m}\epsilon\{\bar{c}_{n\epsilon} \cdot a_{m\epsilon} \cdot (\bar{a}_{m\epsilon} \cdot c_{n\epsilon})\}.$$

This is the form required in the Method of Difference. It is to be observed that in both formulæ I have allowed for the Plurality of Causes.[1]

6. Lastly, we must observe that all formulæ of a Calculus —such as Algebra or Logic—which involve symbols to be taken in a *universal* sense, are to be interpreted as multiply-quantified propositions of an order equal to the number of universalised symbols involved; *e.g.*, the Binomial Theorem $(a+b)^n = a^n + n.a^{n-1}b + \ldots$. is a triply-quantified proposition, for each of the symbols a, b and n here stand for any number whatever. When such formulæ are used for inferential purposes, the *Dictum de omni et nullo* is employed in giving to the general symbols particular values. Or, if we analyse the universals as condensed determinative synthesis, we infer by the formula "b and c implies c". We, therefore, are brought round again to the formulæ of Logic with which we started. And we see that the *intelligent* employment of these formulæ exhibits the same principles which are mechanically evolved by the calculus itself.

The final outcome of this method of notation is the same as that adopted at the end of Mr. Peirce's paper on the "Logic of Relatives" in the Johns Hopkins' *Studies in Logic*. It was this paper that led me to represent the subject in the form given. The differences between Mr. Peirce's method and mine are perhaps unessential. He begins by defining the symbol l_{xy} as a *number*. Any complex proposition (see p. 200) may then be expressed by saying that "some complexus of aggregates and products of such numerical coefficients is greater than zero". As, however, the symbol >0 terminates all the propositions so symbolised, it may be always omitted. And, finally, "the Boolian calculus is applicable" to all the forms of proposition used. On the other hand, I begin by defining l_{xy} as a (molecular) *proposition*, and immediately combine such propositions on the principles of the Boolian calculus. The difference may be in-

[1] Forms of this kind are necessary to reduce Induction to a (hypothetically) demonstrative process, such as Mill appeared to regard it. But I do not wish to maintain the truth or general applicability of these *particular major premisses* in reference to phenomenal sequences, although I believe they indicate the general nature of Formal Induction.

significant. But I can see no reason for restricting the use of these *molecular* propositions to cases of *relative* predication, since it appears to me that any singly-quantified proposition requires the same reference to moleculars in order to expound the rules for its synthesis with other singly-quantified propositions. Mr. Peirce appears to use this molecular analysis only as a last resource, when his highly ingenious calculus, involving "relative addition and multiplication," breaks down under the increasing complexity of the propositions treated. I should prefer to regard these "relative operations" in the light of condensed forms of the ordinary Boolian addition and multiplication. Thus the proposition "x loves some benefactor of y," which involves Mr. Peirce's relative multiplication, would be symbolised $\dot{z}(l_{xz} . b_{zy})$; and the proposition "x loves all but the benefactors of y," which involves relative addition, would be symbolised $\dot{z}(l_{xz} \cdot b_{zy})$. In each case z represents the universe, to which reference is made in the words *some* and *all*. From these forms all Mr. Peirce's results may be derived without any departure from the Boolian Calculus. I do not imagine that Mr. Peirce would deny this. But the particular procedure which he adopts *suggests* that the so-called "Logic of Relatives" rests on a foundation independent of the principles of propositional synthesis worked out by Boole. My chief object has been to exhibit the unity of the whole Logical Calculus—including Relative Logic—by showing its dependence on the single group of fundamental laws regulating the pure synthesis and pure negation of propositions.

(To be Continued.)

V.—DISCUSSIONS.

DR. MÜNSTERBERG AND HIS CRITICS.

By S. Alexander.

Mr. Titchener's article in the October number of Mind for last year will perhaps have thrown grave doubts in the minds of many English readers upon the value of Dr. Münsterberg's work. A criticism which consists mostly of pointing out real or supposed errors of detail, even if successful, is calculated to leave the impression that the whole of the work under review is valueless. Many of his objections refer, indeed, to unimportant points, and the graver theoretical ones are really groundless. No candid reader can however refuse to admit that he, like Prof. G. E. Müller, has indicated real defects in the experimental proof; and that Dr. Münsterberg's inquiries need to be carefully reconsidered and checked both on their experimental and on their theoretical side. But though he professes to do no more, he has done more, and he has contrived to give a one-sided judgment by neglecting the other considerations which give Dr. Münsterberg's work its value. In what follows I hold no brief for Dr. Münsterberg; I desire only to draw attention to the real points at issue, which, I think, Mr. Titchener very often overlooks. No comments would be fair which did not also take account partially of Prof. Müller's criticism, which has much the same general tendency as Mr. Titchener's, and is certainly weighty.

There is no necessity, after all that has been written on Dr. Münsterberg's work, to speak of its general significance. I desire only to record my humble conviction, that, even if the present attacks were more successful than they are, the *Beiträge* remain among the hopefullest psychological work of recent years. They constitute a thoroughgoing attempt to employ experiment with a purpose, as a means of testing introspective analysis, and they have treated the subject with a freedom and a breadth of conception which of themselves entitle the author to the gratitude of students. No one, I suppose, is willing to accept without reservation, or at least without suspense of judgment, the far-reaching significance which Dr. Münsterberg attributes to the muscular sense. Yet here at any rate is a large body of evidence which seems to admit of that interpretation, and part of its strength arises from its mass. True, the very existence, or, at any rate, the effectiveness of a muscle-sense pure and simple, is being called in question. And it is also true that Dr. Münsterberg, while regarding sensations from the muscles, that is, sensations of contraction or strain, as forming only one element in a product to which joints, tendons and skin contribute as well, certainly attaches the position of greatest importance to

the muscle-sense as such.[1] But in so far as we describe the sense of movement as muscular sense (a very incorrect description) evidence accumulated to show its importance remains no less valid whether we interpret the kinæsthesis as mainly an affair of the joints or mainly an affair of muscular strains. And so far as muscular sense means as it should mean the sensation of strain or contraction, here is evidence adduced in favour of its importance. If the 'muscular sense' is treated on a large scale, so too is the issue between association as the main principle of mental combination on the one hand, and something, whatever it is, which is not merely association, on the other hand. For as to attention, which is sometimes put forward as a process distinct from association, the author treats it as a part of the sensory data of mind, and, as I explain below, as following the same law as other sensory data.

I. The first of the studies, which was an attempt to show that the most complicated mental processes were only associative acts, consisted of two parts. In the first part the author claimed to show that acts of choice could be performed in either the sensorial or the muscular form. The method was this. In the sensorial reaction you were told that a word being called, which should be the name of either animal or plant (there were, in fact, five categories), you were to listen attentively to the name, and *if* it was the name of an animal you were to lift your first finger. In the muscular reaction you were told: 'If the name of an animal is called lift your first finger'. In the first case your attention is directed to the word called, and then the rest follows according to the prescription; in the second case you attend to the task of moving your first or second finger according as the

[1] Mr. Titchener does not, I think, accurately represent the state of the case. Dr. Goldscheider himself claims only to have shown that the joint-sensations are decisive for minimal excursions of the limbs. He thinks this probable in large excursions also, but this is certainly not proved. And it is quite premature to say that the muscle-sense has been shown to be ineffectual. What has been shown is that it is not the only factor, and moreover that for sense of *movement* the joint-sensations are of vital importance. It was found that when the sensibility of the joints was suspended by faradisation, the sensibility for movement was greatly diminished, the threshold raised. This does not prove that the muscle-sense is inoperative, for even in passive movements the muscles are contracted, but only that it cannot judge movement without joint-sensations. Now this is just what upon the ordinary theory should be expected, if the joint-sensations supply the place of the tactual sensations of the finger-tip in exploring an irregular surface. Like Prof. Croom Robertson, I find it difficult to conceive how mere sensation of greater or less contraction of the muscles should give us a sensation of *movement*, without help from sensations which can serve as an index of position. Dr. Goldscheider's work appears to me to make this clear for the movement of the limbs themselves as not used in exploration of foreign bodies, and I believe that this would be a reasonable corollary of the usual theory of extension.

name of a plant or animal is called. This distinction being proved experimentally to be possible, what follows? Why, that in any case the choice involves a train of association, but that, as in muscular reaction, attention to the movement to be performed has already set going associations, not only between animal and your second finger, but between animal and the particular animals that are likely to be called, the process of reaction is shortened. And it is not wonderful that, as the principal work is already done before the experiment, the shortened times should be much the same, no matter how the different categories in successive groups rise in difficulty. Whereas, in the other case, the word first has to excite the mass of ideas involved in the prescription to attend to it (has to be apperceived), and then the other associations follow on. The act of so-called apperception is thus one particular kind of association, which may be rendered unnecessary by preparing the mind properly beforehand. Then the second part of the research showed that complicated judgments could be performed in times which did not allow all the operations, conscious and unconscious, to be performed in serial order. They must, therefore, be supposed to overlap, and again the associative process is shown not always to require conscious apperception.

Observe that, apart from details, the very argument implied in the study is this, that the whole process of mental connexion is associative, because if by altering the attention you alter the associations which lie most readily at the disposal of the person, the times of reaction must necessarily be altered, as experiment shows them to do in fact. And in like manner, in pt. ii., the associations excited by the form of the question put must alter the time of answer. Of course it is perfectly legitimate, on the other hand, to say that any one could see this result without the experiments. But it is surely a feature of much of the best experimental work that it puts upon a secure footing, and formulates as a basis for further development, ideas which are known introspectively beforehand.

The importance of the main point made it worth while to go over the ground again. I hope I do not do Mr. Titchener an injustice in saying that he does not appear quite to understand. Else he would not think it a "fatal weakness" in the second part that the process of association should have begun before the last word of a sentence is called. Certainly it does; and this is argued in the interpretation (pp. 173 ff.). This fact may indeed operate unequally in the different questions of any one group—a difficulty met by the number and variety of the questions. Some minor points I refer to in a footnote.[1]

[1] (*a*) On p. 73 of Heft i. there is no contradiction, as Mr. Titchener seems to think (MIND, vol. xvi. p. 522). The two statements he quotes refer to different things: the one to what happened after practice, the other to what happened before practice. (*b*) Can there be any real

As to the experimental proof, I have no doubt that the figures given cannot be regarded as absolutely exact. But though this is so far an imperfection, the figures may be exact enough to support the conclusion which is based upon them; and the faults which can be found with them do not deprive them of their significance in relation to one another. Mr. Titchener does not mention the most important point. The error he speaks of which is due to want of simultaneity between uttering a word and closing the key, even if not constant, could not affect a result running up to 400σ. The real difficulty lies in the following, as Dr. Martius points out. There are five categories blended with the ideas of the movement of corresponding fingers. Now if you happen at the moment to be thinking of the finger and category belonging to the word which happens to be called, the time will be short. If you do not, you must first get your mind away from the idea on which it happens to be employed. How far this is really the fact can be determined only by trial. In a rough trial which I made with keys of a piano, it seemed to me that in order to prevent my mind from wandering over the five alternatives, I must deliberately refrain, and this meant in the result that each finger was strained in anticipation, but the separate ideas of the several categories with their corresponding fingers dropped into the background. There was never any hesitation as to which finger belonged to which category. Perhaps Dr. Münsterberg will give some more information. But at any rate, though the possibility of keeping so many alternatives clear in one's mind is not so perfect as he seems to suggest, the associative preparation exists, and it is from this that the conclusion is drawn.

The explanation of the results as due to automatic co-ordination (MIND, vol. xvi. p. 523) is quite impossible. One set of figures was indeed expressly excluded, because they might possibly depend on such co-ordination. But here the same five words (five cases of *lupus*) were repeated, and the same word recurred many times. This was guarded against in the subsequent experiments, and no word repeated. Automatic co-ordination would not explain why the sensorial times kept on increasing in the successive groups, while the muscular times remained constant. The only automatic co-ordination that existed, so far as I can see, was that of category and finger, and this co-ordination was necessary for the experiment. Here again the point seems to have been missed. This co-ordination cannot affect the question whether the choice-reactions were automatic. How can you

doubt as to which finger the experimentee intended to move, either in the mind of himself or of the experimenter? (*c*) Mr. Titchener objects to the large proportion of false reactions. But these false reactions always occur in the muscular method. The large number of them here shows how difficult the act is, not that the method (which seems the only one available) is useless. His explanation that the mistakes are due to imperfect practice contradicts his view that the constancy of the muscular reactions is due to perfect practice.

have automatic co-ordination, when the words which were called were called only once? Of course, the extent to which particular words have become favourites of the person reacting, from education or occupation, does affect the question. But it applies equally to the sensorial reactions. The suggestion which is made by Dr. Götz Martius in his article, that the constancy of the shorter time in all the groups may be due to practice, does not seem likely. Even if all the "sensorial" reactions in each group came together at the first, and the "muscular" ones after them, yet the questions, as shown by the sensorial times, are of increasing difficulty. Moreover, the explanation of the constancy is easy. What makes the sensorial reactions differ is the difficulty of the question put. But in the muscular reactions this inequality is removed, because the difficulty is overcome before the reaction takes place.

II. It is fortunately not necessary to be so long with regard to the paper on the sense of Time. The explanation there given is that we measure time by the waxing and waning of muscular sensation. An interval being begun by an impression, the accompanying muscular sensations, strong at first, decline from this moment, and then begin again to increase with the expectation of the impression which is to conclude the interval. Accordingly a second interval will be judged equal which ends at the same phase in the upward movement of the strain. If we assume that attention is dependent chiefly on the sensations of muscular strain involved in the fixation of a mental state, we can express the theorem of the essay by saying that it is the rhythm of the attention which is an index to the length of time. The author, by an introspective analysis of the muscular accompaniments of a time-impression, concluded that the chief modifying element was the breathing, and he endeavoured to prove his thesis by showing that error in judgment of the equality of two times greatly diminished when the limits of the intervals always coincided with the same phase of respiration.

The principal difficulties urged against the work (besides complaint[1] of the inadequate report of the experiments) are of a theoretical character. One which is strongly urged by Prof. Müller, and also in another place by Mr. Titchener (MIND, p. 533), may be deferred till I speak of the last of the researches, that on the Intensity of Sensations. It is in substance that the sensations of strain, the varying intensities of which are declared in the study on time to be the basis of our measurement of time, are in the later study declared never to vary in intensity at all. This would be indeed serious, if it were well founded, as I shall point out it is not. The other theoretical objection is also at first sight serious and raises an important point. I will quote the

[1] Mr. Titchener's remark (p. 524) that the hammer used in the experiments takes time to fall is perfectly true. But the error is a constant one and does not affect the result.

words. "We are expressly told that the direction of the attention upon a period of time is nothing more than the consciousness of our sensations of strain, and of the alterations in their intensity during that period, yet the attention is focussed upon these sensations of strain in order that we may measure the time. Worse than this, the act of attention is itself explained by means of muscular sensations: so that we somehow manage to concentrate a sensation of strain upon another sensation of strain." All these sentences raise, I suppose, the same difficulty, but it vanishes after a little reflexion, and arises apparently from the phrase 'directing or concentrating the attention upon' something, which seems to suggest that the attention is a glass turned on to an object, instead of merely an accompanying state of mind. 'The concentration of attention' (regarded as itself a sensation of strain) 'upon a sensation of strain' is a phrase which describes that the sensations of strain are uppermost and that sensations likely to divert from them are actively suppressed. When at this moment I wish to attend to a strain of muscle in my arm, I feel that sensation distinctly, and I feel also other strains both in the arms and in my eyes and head. To attend to a muscular strain is to have it, and to take the necessary measures to keep it. This is explained by Dr. Münsterberg himself on p. 25 of his essay. "'Our attention turns to the sensations of strain' means of course only this. The intention to measure the interval of time, and the other circumstances of the experiment supply the psychophysical conditions in consequence of which the perception of the sensations of strain increases in clearness, everything else in our consciousness recedes, and by secondary fixation of our organs we, as it were, turn ourselves towards the strained organ."[1]

VI. Perhaps it will be well to desert the order of the essays and pass on to the research on the Intensity of Sensations (pt. iii. of the *Beiträge*), because of the supposed inconsistency between its view of muscular sensations and the expressions used about them in the study on time, and it may be added, in the whole of the rest of the book. The theory which the author advances is that the intensity of sensations is measured not by anything in the sensation in itself, which varies only in quality, but by the accompanying, or let us say implicated muscular sensations which vary only in quantity and not in quality. I should be as audacious as Dr. Münsterberg himself if I

[1] One small matter. Why does Mr. Titchener think it strange that a pause in which there are no sensations of strain should be timeless? His remark where it stands is not to the point, for Dr. Münsterberg is speaking not of 'a pause,' but of 'the pause' between the expiration and the inspiration, and says that if an impression falls within that pause you are at a loss to fix its place in time. But how should we *experience* time in a pause if the attention were suspended? The pause could only be measured by the clock. But we are not investigating what may be called objective time, but the sense of it.

regarded this theory as sufficiently proved. The experiments which tend to show that intervals between pairs of impression derived from different senses can be compared, as ought to be possible if intensity is but muscular strain, are put forward only as provisional, and they are not numerous and varied enough to be conclusive. The theory itself I regard as a hypothesis, one which if it could be justified would constitute an immense simplification in psychology, and one which has much in its favour, and is as I think untouched by the theoretical objections which I have seen. The point from which it proceeds is certainly of great importance, namely, that (to speak only of the five senses) a change of intensity really means a new kind of sensation, and you cannot add sensations together—you cannot say a low sound is part of a loud sound of the same pitch, or that a slightly sweet sensation is part of a very sweet sensation. Now this study attempts to supply an explanation of how, in spite of the qualitative difference of all sensations, it is still possible to measure their difference quantitatively. The muscular sensations are held to occupy an exceptional position. As sensations they are always the same in quality, and a smaller muscular sensation really is contained in a larger one—you can pass from a muscular strain *ab* to a strain *abc* by adding on the difference *c*. One fact to which allusion is made as rendering this assertion necessary is that in judging weights it is indifferent from which position of the forearm we start in weighing and yet the arm may start with a considerable muscular contraction. This certainly does seem to indicate that the mere change in the muscular strain, the mere addition to the sensation, is felt and serves to measure the weight.

Now comes the objector and declares this view of muscular sensation as being always the same sensation and varying only in its duration and extent (in time and space) to be opposed to all other assertions about it. But this is a misunderstanding. It seems to be thought that a large muscular strain would not be felt *differently* from a small one. This would be a monstrous assertion to make. But what is meant is not that muscular sensations cannot be distinguished, but that though it is always one and the same sensation there may be more or less of it. Muscular sensations may be properly spoken of as varying in intensity, provided we do not suppose that their intensity is the same kind of thing as the intensity of sound or light sensations, which is a difference of quality. In the case of these ordinary sensations, too, it would be absurd to say that intensity is abolished because it is explained. The case may be illustrated thus: we may have two pears each weighing a quarter of a pound, and another of the same kind which weighs half a pound. The larger pear is quite different qualitatively from the small ones; it is probably more luscious, is certainly more interesting, and will cost more. You cannot get the same kind of satisfaction from the two small ones as from it. But so far as weight of pear is concerned the two

small ones are every bit as good, and the unit by which its weight is measured is the single small pear.

Thus the muscular sensations differ in being different multiples of the same unit. They are described as differing in respect of time because any given muscular sensation may be produced by adding several units together successively. The sensation accompanying a large contraction of the biceps differs from that of a smaller contraction because more units of "strain" have been added. They are described as differing in respect of space because (at least I suppose this is the meaning though it is not clear) of the area over which the sensation extends. And with this explanation the apparent objection appears to me to fall to the ground.

The other objection of circularity in argument which Mr. Titchener borrows from Dr. Martius is very easily disposed of, like most objections from circularity. How, it is asked, can muscle-sensations which are already different in respect of time and space be used to measure intensity, when it is only through them that we know time and space? How, I ask, could we know time and space by muscle-sensations if those sensations were *not* already different in time and space? Of course the objector confuses between time as measured by the clock, and the sense of time as dependent on muscular sensation. It is not asserted that in a greater muscular strain you necessarily have the *sense* of longer time; for that you would need to attend to the change in the amount of the sensation. The theory that muscular sensations are the basis of our measurement of intensity is so far from being inconsistent with the theory of the time sense, that it corroborates that theory. If muscle-sensations differ in strength according to their objective duration, how should duration be better observed than by attending to the variations in the strength of these sensations? [1]

Another objection raised is that if the theory were true, all sensations should form a single intensive series. This is perfectly right. There would, if I understand rightly, be a single series, but there would be many qualitatively distinct sensations at each point. The various sensations would form a column five deep. That as a matter of fact we are not in the habit of comparing disparate impressions, equating a definite loudness of sound to a definite brightness of light, proves nothing against the possibility of so comparing them, because the comparison serves no practical purpose. There is no direct comparability between drinking a bottle of champagne and listening to Herr Joachim; yet, our practical interests being appealed to, we compare the amount of

[1] As to the assertion that the sensations differ in respect of space there is some obscurity. Elsewhere (p. 32) Dr. Münsterberg speaks of "the duration of the strain and the range of its extension (Umfang ihrer Ausbreitung)". Does this mean simply the inclusion of more muscles? Elsewhere (p. 33) he speaks of its "encroachment on neighbouring areas".

enjoyment they give us, and may equate them by spending ten shillings for either. The reason assigned by the objector to show that there is no single intensive series is the arbitrary starting-point from which the intervals were measured. Now, in the first place, the starting-points were not arbitrary. Dr. Münsterberg says that he chose as starting-points sensations which on the ground of practice in such estimation seemed to him equal, "not to prejudge the matter by saying that they called forth equal impressions of strain" (Heft iii. p. 71). But, in the second place, supposing the starting-points were quite arbitrary, this would not affect the question. The object was to ascertain whether intensive relations of disparate impressions could be estimated in any regular way, as should be the case if intensive change was always measured by addition to the secondary strains. To have set about comparing different single impressions directly would have added enormously to the difficulty. But now supposing the ultimate theory to be true, then no matter what starting-points were taken the resulting law should not be affected; though of course the actual numerical additions to the *stimuli* would have been altered. It is not impossible that there may be some confusion between the intensity of the sensation and the amount of the objective stimulus lying at the basis of the objection.

Though I cannot regard the theory as at present more than a hypothesis awaiting more exact and extensive verification, I think it worth while to point out that it contains no inherent contradiction, and that it is a theory which, while it raises difficulties,[1] well deserves further work, all the more because of its extreme audacity. Criticisms of the kind which I have been considering are apt if unanswered to cut off interest in the matter. As for the solution which is offered by Dr. Münsterberg's opponents of the experimental results, that the intervals between pairs of disparate sensations are judged equal by the mind's estimating the number of perceivably different sensations which can be found in each interval, this seems to me questionable in the extreme. There would be something to be said for this interpretation if the intervals had been taken in regular order. Even then we are assuming a power of mental arithmetic which seems incredible. And as the intervals are not taken in any regular order I am unable to imagine it at all. The more audacious theory appears to me much the more natural.

III. The other researches, III., IV., and V., are of a more special character. They all tend to magnify the muscular sense. About IV., the study of measurements by the eye, I have nothing to say. Dr. Münsterberg must settle with Prof. Müller whether his method is wrong; and on III., which deals with the

[1] One of the questions raised by it is how far we can distinguish between the effect of the natural intensity of a sensation upon the muscles, and of the attention.

oscillations of attention, and V., which discusses the determination of direction by the ear, I feel some hesitation in pronouncing an opinion, owing to the special character of the investigations. In neither case is it the experiments themselves which are questioned, but the theoretical interpretation of them. The experiments themselves supply valuable material which must be reckoned with. In the study of oscillations of attention the usual grey ring just distinguishable on a white disc appeared to vanish and then reappear. By introducing at intervals various motions of the eye, making the observer sharply close the eyelids, interposing prismatic glasses, moving a grey disc in front of the eyes, the time between two disappearances was made to vary. The investigator concluded that the oscillations were due to fatigue in the eye muscles; the fatigue leads to an alteration either of the fixation or the accommodation or both; the grey ring vanishes; the muscles then recover, return to their duties, and the grey ring reappears. The critics have, I think, given Dr. Münsterberg in respect of this article some very shrewd blows indeed. But though I cannot see any answer to some of their criticism of individual links in the chain of his reasoning, I can by no means think that his explanation is disposed of. One thing the experiments seem to demonstrate, that the phenomenon is intimately connected with eye-movements (using this term to include alterations of the lens, as well as movements of the whole eye). Mr. Titchener's remarks are not clear to me. Has he demonstrated that no movements actually take place at all, as he seems to suggest? If so, I can see no other explanation than that of Herr N. Lange (the original investigator of the subject—*Phil. Stud.* iv.) that the phenomenon is central, a case of the general law of psychical relativity; and this I confess I do not well understand, until it is also shown what are the actual variations which take place in the psychological or physiological complex indicated by the term 'central'. Nor again does this explanation account for the new experiments. But a still greater difficulty would be the actual feelings of movement in the eye, which in my own case are very marked. The observation is easy to make and does not require a revolving disc. A pin-head on a black surface or a small strip of colour on a ground slightly lighter or darker serves the purpose perfectly well. I felt a movement of divergence when the object vanished and of convergence when it reappeared, like the movements noticed in the well-known puzzle diagrams which change their relief at intervals.

The question at issue is whether the ring disappears because the attention cannot bear the strain required for seeing, or because there is nothing to see. Is the exhaustion of the organ or of the muscles? That there is a great strain of the muscles required in order to keep the eye so intent on the dimmer colour that it perceives the distinction of this colour from the background is plain, and it is natural therefore that any relaxation of the

muscles should make a difference to the eye's sensitiveness under the conditions of the experiment. Dr. Münsterberg holds that the fatigue of the eye brings the difference of the grey ring and its background under the threshold of difference both by altering the accommodation and by moving the eye. As to this second point his reasoning has, I think, been proved fallacious. But the failure of accommodation is sufficient. It is hazardous to argue that when the eye swerves aside the difference of stimulus may still be apprehended by the more excitable peripheral spot upon which the grey now falls. In the passage of Helmholtz referred to (*Phys. Optik*, p. 315)[1] it is pointed out that though we can sometimes see indirectly a difference not perceptible directly, this does not happen at once but only after some time of attentive consideration. And here the attention is relaxed.

To suppose that the phenomenon is merely sensorial is open to the objection that whether the eye moves or remains still the stimulus persists; how should the organ recover? This is an objection to the theory thrown out (merely as a suggestion) by Prof. Müller, that the sensitiveness of the eye being reduced by the stimulus, the muscles move the eye by a reflex supervening upon this sensory exhaustion, and that the movement, by altering the pressure in the blood-vessels, restores the sensitiveness of the eye, as investigations by Messrs. Fick and Gürber, which he quotes, seem to show that it does. For though the movement may thus be beneficial, the fovea is still turned on to the white disc, and exposed to an even greater stimulus than before.[2] Nor do I see how this idea would explain the fact that when a grey card is moved in front of the revolving disc at intervals the ring disappears more quickly than before. For the movement of the eye must so far restore the sensitiveness, and the grey card does not excite more than the grey ring. Whereas the additional strain of the muscles in fixing, in spite of the inclination to follow the moving card, will very well explain the phenomenon.

On the other hand, the theory of muscular fatigue, though it does not seem able without further verification to account definitively for the disappearance of the ring (which might be due to exhaustion of the sensitiveness of the retina due to changes in the circulation), is able to account for the recovery of the eye's sensitiveness and for all the other experimental facts. The criticism passed upon Dr. Münsterberg's assumption that fatigue of the muscles acts itself as a signal to the contraction of antagonist muscles, does not seem to me very serious. All that is meant is, I suppose, that when you are tired of keeping your

[1] Of course the greater sensibility of the moving eye will explain, as Mr. Titchener says, some of the experimental results. But it only restates them, and is itself in need of explanation.

[2] This would not, of course, apply to the case of a lighter object on dark background.

muscles contracted you unbend them, as you stretch the arm after exercising the biceps.

It appears to me, then, that a case, though by no means a conclusive one, has been made out for supposing the muscular strain to be the chief factor in the production of the phenomena. But I have dwelt so long upon these points because the possibility that the state of the blood-vessels may be the determining factor (apart from change in the retina itself) makes it natural to say that here is a very important case in which to try the question, What is the relative proportion of the state of the circulation and the state of the muscles in determining the attention? This subject appears to be of the utmost importance at the present moment, and to be making a larger and larger claim. The recent work of Dr. Alfred Lehmann on Hypnotism (*Die Hypnose*, noticed in MIND, No. 63, by the present Editor) has revived the theory that the state of the circulation is really the chief or the only condition of attention itself.

V. It remains to comment on the study of Localisation by the Ear, which was certainly a fascinating piece of work, because it seemed to place the ears in the same position for apprehending direction in space as the eyes and hands for apprehending place. Dr. Münsterberg tackled the question by tracing how the sensibility to change of direction changes at different points of the compass on three different circles, of which the middle point between the two ears was the centre. The circles were chosen in three planes: one the horizontal through the tympana, the other the median vertical (or sagittal), the third the frontal at right angles to both the first two. By considering what different sets of muscles were engaged at the different positions and in what proportions, he concluded that the ear determined the direction of sound by the perception of the movements of the head required to bring the ears into the position of distinctest hearing, that is, with the sound straight in front. In the same way the popular theory of localisation by the eye holds that the direction of a visible object is determined by the sense of the movement of the eye necessary to see the object with the point of distinctest vision. The stimulus to these movements Dr. Münsterberg, following out and improving upon a theory of Prof. Preyer's, finds in the different distribution of the impact of the sound waves on the semi-circular canals.

Mr. Titchener points out that the three circles cut one another in various points, and yet the thresholds are very different at the same point according as it is regarded as belonging to one circle or the other, and he adds that the strains cannot differ so much at identical points. But if he will carefully go through his formidable-looking equations, and will consider what Dr. Münsterberg has shown at length, that according as the head is moving in one circle or the other the strains are very differently disposed, his objection will mostly disappear, pending

at least the control of the figures by experiments performed on other individuals. Thus, for instance, at 90° in the horizontal circle, the threshold is an angle measured approximately by an arc of 7·5 cm. on a circle of radius 1 meter. In the frontal vertical circle at the same point it is only 2 cm. But the strain in the horizontal direction is very great, that in the vertical practically nil; it is natural therefore that the threshold of difference in the horizontal circle should be large and in the other small.

A more serious objection is that the results are explainable by the usual theory that direction is determined by the relative intensity of the impressions on the two ears. Prof. Müller points out that owing to the shape and position of the shell of the ear this ratio changes less rapidly the further the sound moves to the back, and the thresholds would naturally increase in the horizontal circle from before backwards. That this is insufficient seems proved by the fact that the ratio changes from a maximum at 90° to unity at 180° just as it changes from unity at 0° to a maximum at 90°, that is, in a quarter of the circle. But the experimental figures show that the threshold rises continually, that is, according to this interpretation the rate of change of the ratio in the second quadrant is slower and slower, and yet the ratio arrives at unity in the space of a quadrant. Mr. Titchener's objection is different: that the change in the intensity of the impression was taken (under the conditions of the experiment) for a change of direction, which was what the subject expected. This is of course only a possibility, and it does not explain why in the one-ear experiments the thresholds are higher on the side of the good ear than in the two-ear experiments performed on the same individual.[1] For in both cases the absolute intensity changes as soon. The reason must lie in the relative intensity, and then the other difficulty arises.

It must be admitted that a great deal more remains to be done before Dr. Münsterberg proves his point. Yet, so far as I can see, the experiments indicate some other cause than that assigned by the usual theory. In fact, that theory is not in any case final. For we could then determine direction only by experience derived from touch and sight, experience that when a sound has struck the two ears with a particular relative difference it has come in a particular direction. Now it is just this further question upon which Dr. Münsterberg's method and interpretation begin to throw light; because they attempt to show the existence of a special measuring instrument for auditory space, and to answer the question why we instinctively turn our heads towards the source of a sound. It is perfectly true that the way in which, physically, the different directions of sound can affect the canals is not explained. Yet fishes, to which

[1] Why does Mr. Titchener say (p. 528, note) that the threshold at 90° should be greater in the one-ear experiments than at 180°?

direction of sound must be important, have canals and no cochlea; and besides this we have the connexion of the canals with head movement and the instinctive movement just mentioned. The links have yet to be indicated. Prof. Breuer himself, to whom Mr. Titchener refers in a note, contemplates a theory not unlike that of Dr. Münsterberg's, while fully admitting that the physical conditions are unexplained. He conceives it as just possible that future inquiry might show that the elasticity of the temporal bone is different in three different planes. But no one will pretend that the connexion is made out as yet.

Into the question whether the apperception-theory attacked by Dr. Münsterberg is identical with the theory of Prof. Wundt, I have no intention of entering. No such discussion would affect the question of real scientific interest, whether the theory offered in opposition (not a new theory, be it observed, but an extension of an old one) is right, whether it succeeds in interpreting the facts. And such a discussion would mean a great many pages of criticism, partly literary, for which I have no inclination. Nor should I have attempted to deal at all with a subject on which I have no claim to speak as an expert, did I not feel it desirable as a learner to get the questions at issue clearly before my own mind and those of other persons. The impression left upon me both by Prof. Müller's and Mr. Titchener's criticism is that it proves too much. The writers have done a service where they have pointed out real errors, and where they render suspense of judgment or reconsideration necessary. But they would have done a greater service if they had also done more justice to the meaning and the originality of their author's work, both on its experimental and on its theoretical side. The new prospects which that work seemed to offer in the subject constituted its attraction for me; and I still respectfully maintain my opinion of its value.

S. ALEXANDER.

VI.—CRITICAL NOTICES.

Logik. Von Benno Erdmann. Erster Band, Logische Elementarlehre. Halle: Max Niemeyer, 1892. Pp. xv., 632.

The volume before us contains, we may suppose, all the decisive factors of the author's logical theory. As "doctrine of the elements of thought" it contains an account of the objects with which thinking is concerned, and also of judgment and of reasoning both deductive and inductive (p. 31). The second part of universal logic consists of the general methodology of science (*ib.*), and is reserved for the second volume of the present work. The study of special methods peculiar to the special branches of science does not fall within the province of logic as such, but is a technical supplement to the separate sciences. Sir John Herschel's "Preliminary Discourse on the Study of Natural Philosophy" is referred to as a model of such "technical methodology". The author does not include this within his scheme.

In a short Introduction (34 pp.) the relation of Logic to other mental sciences is laid down. Metaphysic (taken as one and the same science with "Erkenntniss-Theorie," p. 11) deals with the material presuppositions of scientific thought; Logic with its formal presuppositions (the existence and value of Judgment, Induction, Deduction, and the like). Psychology deals with processes in consciousness and their connexions according to law; Logic treats of truth and probability as properties of predication *qua* issuing from the relations of perceived or thought content ("aus den Beziehungen des Vorgestellten," p. 18). But yet Logic builds on Psychology, in so far as we must know what a judgment is before we can tell how to frame our demands upon it. "The theory of abstraction from Socrates to Locke, too often represented in our own formal logic, shows the danger of ignoring psychological fact in logical doctrine." Much the same is the relation between logic and grammar. Thinking in the narrower sense (as = Judgment, p. 5) develops *pari passu* with language, though perception, and the train of memory, can go on without words. In connecting words with thinking, we must bear in mind that words for this purpose are the actual images or remembered ideas of words, whether visual or auditory. But for all this logic is not universal grammar. Grammar is moulded by practical needs. It develops what is not essential to logic and omits much that is. Only as a storehouse of intellectual results it enters into the material of Logic (pp. 29-30).

After this Introduction, book i., forming about a quarter of the volume, is devoted to the Objects of Thought, under the

influence, it appears to me, of Mill's discussions upon the "Things Denoted by Names". As "Vorstellen" includes all contents of consciousness of which we are aware as objects, this discussion coincides with a treatment of "Vorstellungen". These, it will be observed, are on the whole regarded as prior to Judgment.

In this discussion "objects of the first order" are the content of perceptions which by the action of appercipient masses and through a process of positive and negative abstraction (pp. 42-44) have come to be regarded as single or individual objects, whether real or ideal, concrete or abstract. In contrast with them the author treats as "objects of the second order" systems or aggregates which are held together by the uniformity of the relations between their members (pp. 100-101). The term "Inbegriffe" ("totalities" "aggregates" or "manifolds") is expressly applied by the author to objects of this class, of which a section of space, a portion of a landscape, or a material body regarded as a complex of atoms, are given as examples. As discrete, these manifolds are *collective*, and are represented by such instances as the series of positive whole numbers, which is quite independent of the existence of real numerable objects, and by legal or juristic "persons," *i.e.*, corporations or institutions. As continuous, the "totalities" are represented by the system of number, considered from the standpoint of modern mathematics as capable of embodying continuity.

The second portion of the first book treats of the logical relations of the objects of thought. The chief of these is the relation of Genus and Species, with the accompanying properties of Extension and Intension. It is noticeable that the author finds a meaning for "contradictory" and "contrary" within the relations of species among each other, and apart from any framing by the judgment. The treatment of Intension and Extension (Content and Area, "Inhalt" and "Umfang") presents no novelty, although a crude application of the pyramidal arrangement is perhaps intentionally excluded by the words "in comparison with the less connotative members of the series" inserted in the ordinary statement that the greater the intension the less the extension (p. 153). There would thus be no contradiction in assigning to the genus the same content as to the species. The arithmetical phraseology of the "inverse ratio" is rightly rejected (p. 154). But the subsumptive basis of the pyramidal arrangement is as a whole accepted.

In the concluding chapter of the first book we have a novelty indeed. The law of Identity is set down as the law of perception or idea (Vorstellen). And as such a law it is taken to represent the fruitless effort to express "idea" (Vorstellen) in Judgment. It is understood as the limiting case of relation—a relation whose terms are not distinguishable, and therefore form

no relation at all. Partial Identity is inconceivable. *There is no identity but this self-identity*, which, excluding all continuity (for what is presented a second time is not identical with what was presented before (p. 174)), must, so far as I can understand, be absolutely atomic. Identity is thus simply "position". It repudiates all intelligible attribution. It is pure momentary being. By such an interpretation Identity is utterly swept out of the region of Logic. The result is not fatal, so far as I can see, because the author seems to use "Gleichheit," sharply distinguished from "Ähnlichkeit," where the work of identity in binding the different together has to be named. The question thus becomes verbal. As a synthetic consequence of the law of Identity the author lays down the law of non-identity. "Every object, so far as identical only with itself, is different from every other" (p. 175). "And from itself" needs, I think, to be added, as there is no self which does not include differences.

The author, however, had a distinct purpose in throwing so much of his object-matter into the class of "Vorstellen" and below the synthetic activity—which he does not admit to be synthetic—of judgment. The nature of this purpose we shall see in his theory of judgment. By way of transition, he points out that ideas tend to pass into judgment both by our tendency to refer marks through the aid of word-presentations to an object in course of realisation, and by the condensation of judgments into complex word-meanings which, in actual consciousness, only exist as judgments. Such word-meanings are the "notions" (Begriffe) of traditional logic (p. 184).

The leading ideas of the author's theory of judgment appear to be two. First, Judgment *is* predication as against the existential theory (p. 187); secondly, Predication is more than—is, so to speak, on the top of—presentation or idea (Vorstellen). Psychology tells us that the object is given *before* enunciation takes place (p. 208); the judgment of perception and experience is merely the predicative expression of an extension which *has already taken place* in "Vorstellung". Now we see why "Vorstellung" had a first part of logic and an elaborate analysis to itself. It, in fact, does the work; Judgment comes after and stamps it for expressional use. There can be no synthetic judgment of perception or of experience (p. 211). This is supported by a careful analysis of the apperceptive process by which a new property is observed in perception or generalised in experience.

Thus the separation of Subject and Predicate in language indicates no separation of their meanings in thought, but, on the contrary, "logical immanence of the predicated content in the Subject" (p. 221). The "Vorgestelltes" is not severed in the Judgment, but preserved. This unity of the content in Judgment seems to be the idea in Ploucquet

which has fascinated the author, as I judge from a quotation (p. 222).

Passing from the evidence of Psychology and Grammar, we come to the Logical theory of Judgment. Theories of Judgment are divided into Extension-theories and Intension-theories or Content-theories (p. 246). Extension-theories include the Subsumption-theory and the Identity-theory (p. 252), of which the Quantification-theory is taken as a form. This Identity-theory is not that of Jevons, but essentially depends on Quantification. Intension-theories include Jevons' identity-theory (this classification surprises me), Lotze's thorough-going determination of S by P (p. 259), and the author's theory. According to this (p. 262) "the judgment is the placing ('Einordnung') of one object in the content of another, performed by means of the proposition, conditioned by identity of content ('Inhaltsgleichheit'), and represented ('Vorgestellt') in logical immanence". The Subject is that element of content in the Judgment *in* which a place is found, the Predicate that *for* which a place is found. The copula (see p. 189) is the conjunction or relation of the two, and cannot be expressed in language without the inclusion of both. In "The dead ride fast" the copula can only be otherwise expressed by "The fast riding of the dead". That is to say, it is such a relation as exists only when this predicate is placed in this subject.

In harmony with this analysis, and in lieu of the Law of Identity, we have the principle of affirmation or of Logical Identity ("der logischen Gleichheit"): "An object can only be predicated of another in so far as its content can be placed (eingeordnet) in the content of that other" (p. 266). From this arise two corollaries: (*a*) The law of agreement, *viz.*, that an object is "gleich" to itself when repeated in thought (p. 269); and (*b*) Objects that are "gleich" can be substituted for each other.

The validity of judgments is now discussed, and questions are admitted as a class of judgments without validity. A fully valid judgment is one of which the object is certain (gewiss) and the enunciation necessary in thought. Certainty, for logic, is derived from repeated identical (gleich) cognition or apperception (p. 272). There are judgments of subjective and of objective certainty, called in brief subjective and objective judgments. The difference between them lies in the consensus of judgments, and both are therefore ultimately reducible to subjective validity (p. 274).

On the basis of this view, which analyses the consciousness of validity in judgment into Certainty and Necessity (p. 282), the author criticises what may be described as existential theories of Judgment or as theories of assent. These he finds led up to by Hamilton (p. 285), and fully developed by Brentano, by the side of whose doctrine he adduces Mr. Bain's connexion of belief with

the "power which an idea has obtained over the will". He does not seem to see any prospect of combining the existential with the predicative value of judgment, and on the ground of the latter he rejects the former (pp. 289-90).

The remainder of the discussion of Judgments is occupied with their classification. They are divided into Real and Ideal; the meaning of the latter is, I think, a novelty, being taken to include the judgment "ought" by predicating its content *as a fact, of a subject regarded in an ideal light* (pp. 314-319); and into Judgments of Extension and Judgments of Intension. Reflective Judgments (Beurtheilungen) are taken as a further class, including negation and modality. The negative Judgment is, therefore, as in Sigwart, the denial of an existing affirmation; and this doctrine is subsequently applied, as in Sigwart, to explain the process of double negation—a very doubtful expedient. It is noticeable that the author is obliged to maintain that no judgment of perception can be negative (p. 359), that is to say, he deals only with "bare negation".

In the theory of Inference the traditional Syllogism is on the whole maintained in its place as the centre of reasoning, being treated *after* the Hypothetical Syllogism which, as a mere affirmation of an element in the major premiss, comes next after immediate inference.

The distinction between Syllogism in the stricter sense, and Syllogism in the sense that includes Induction, is found in the difference between the relations of the element common to the premisses with those elements which are not common to them. In Deduction the common element drops out, and leaves a relation between the two elements which are not common; in Induction the common element remains and enters upon a new relation to the elements which are not common (p. 491). By pronouncing omission of the middle term needless in Syllogism we should destroy this distinction. The traditional Syllogistic forms are given at some length and call for no remark.

There is a curious defence of the syllogism against Mill's criticism of it as a *petitio principii*, in the case of inductive premisses, by distinguishing the "registering" from the "inductive" element in the major premiss, and exhibiting the conclusion as issuing not from the former but from the latter (p. 558). The distinction as drawn seems to me a lax one, for we surely do not know except by inference that all men up to this generation have died; yet this is the element in the major "All men are mortal" which the author sets down as "registered". I do not, therefore, see that the author's analysis adds anything to the ordinary view that the major premiss, in subsumptive Syllogism, shows the operation of the reason by which we draw the conclusion.

The general account of Induction is couched in symbols which allow of only two kinds of terms in each argument—

S_1[1] is G, or G is P_1,
S_2 is G, G is P_2,

but permit the premisses to extend to any number. Therefore, as it seems to me, there is from the beginning no adequate allowance for the transformation of content by analysis, and the problem takes a set towards the inference from many to all, which it cannot shake off. And so we find the principle of Induction "like causes produce like effects" supplemented by the material postulate, which in truth has to do only with the degree of realisation of human purposes, that like causes will in fact be found (p. 578). Stated as the fundamental principle of Induction, this takes us at once into questions of probability and the number of unanalysed instances, and distracts us from the task of analysing our cases so as to make sure that we can adequately distinguish the "like" causal relation, if it shall recur in our experience. Induction does not, in fact, tell us *that* this causal relation will recur; it only ensures that we shall recognise it if it does recur "In *these* cases the causes are like," we know from the law of Causation. How many of these cases there will be, no power can predict. Therefore the part played in Induction by number of instances is, in my opinion, wholly misconceived (p. 605), and Induction is separated from all existing precise knowledge and restricted to what can be done by instances *de novo*. But the moment that, in working thus *de novo*, it reaches a scientific stage, the single observation will again become capable of giving a conclusion, and therefore to deny that it is so capable is to deny that Induction should be called Induction when it becomes a scientific method. At this point the question becomes verbal. It is remarkable that the author himself is forced by his view to say that "pure conclusions by induction become rarer, as our knowledge is more developed" (p. 606). He will not admit Induction to be an inverse process of Deduction, and in this he appears to be technically right. It is not, I should have thought, related as division to multiplication, but rather as the establishment of the unit or the numerical series to either of these complete arithmetical processes.

To sum up, the unity of the object in judgment is the essence of the author's theory, and is, I believe, a primary truth of logic. The author is also thoroughly clear that relations in Judgment are not relations between ideas, but relations within ideal wholes. His view of the copula is new to me, and emphasises this unity. The sharp distinction of the judgment from apperception and

[1] S_1, &c., are taken as species represented by individuals; P_1, &c., as predicates. The conclusion in the first case is from instances to a common property; in the second, from properties to remaining properties.

presentation, together with the total repudiation of reference to reality outside the subject of judgment, appears more doubtful. With these features are connected the strong antagonism to existential theories of the judgment. I should have hoped that on this question a *via media* might have been found. The total refusal to consider whether a categorical judgment involves the reality of its subject (p. 418) seems unjustifiable in the face of recent speculation in England. The treatment of the Existential Judgment does not wholly make up for this (p. 310).

It is doubtful whether the author's own theory of judgment and reasoning really falls outside subsumption. It is entirely within the relation of subject and attribute, and the arguments from construction, in which a major premiss is admittedly superfluous, are not considered at all.

The classification of Judgments is not progressive, but to a great extent a cross division, and the separation between Extensional and Intensional Judgment appears unreal.

Probably the most valuable part of the work except the immediate account of judgment is the analysis of apperception and positive and negative abstraction as furthered by the influence of language. The conceptions of "abstract objects" could hardly come into existence apart from the ideas of words, which alone call attention to the organised relations of such systems (pp. 53 ff.).

It is not likely that I have done complete justice to this valuable treatise. It is plainly full of all kinds of knowledge and suggestion, but the novelties in it strike a reader at first with a certain air of perversity, which a longer acquaintance might remove. Was it worth while, for example, to say that the subject determines the predicate, and not the predicate the subject (p. 251)? The saying impresses us with the unity of the object about which we judge, and this is the author's aim. But has it not always been obvious that the determination must be reciprocal?

The work belongs to the German reaction, and shares with it the dread of system, the love of psychological learning and minute distinction, the excellent common-sense, critical sagacity and freedom from traditional bias, characteristic of the writers who are taking to pieces the work of the great idealists. As, however, we are proud to find that Jevons and Mill return upon us from Germany, perhaps a German thinker may not be altogether horrified if an English reviewer expresses the conviction that the present movement is doing little more than translating Kant and Hegel piecemeal into a more modern terminology. I do not think that in the appreciation of true logical form we are at any point very far in advance of Hegel—though some definite steps have undoubtedly been made—while in our insight into the spirit and essential connexion of the different forms I am sure that we are still behind him.

BERNARD BOSANQUET.

Handbook of Psychology: Feeling and Will. By J. M. Baldwin, Professor in the University of Toronto. London: Macmillan & Co., 1891. Pp. 394.

This volume completes the Handbook of Psychology, the first part of which, on the Senses and Intellect, has already reached a second edition. It is to be regretted that the first volume has not been, perhaps could not be, recast in the light of the second, as several topics which appear now under 'feeling' would have been much more in place under 'intellect'. It is true that Prof. Baldwin's classification is only in name the ordinary tripartite division, and is based, not on the preponderance of one or other of three primary and ultimate elements in the states called severally states of intellect, feeling, or will, but on the admission of three distinct '*functions*'—intellect marked by reference to a thing or object, feeling by reference to self, and volition characterised by effort or exertion (i. pp. 36, 37). Feeling, as thus understood, is not mere pleasure and pain, though pleasure and pain is a constant feature of it (vol. ii. pp. 86, 87), but is synonymous with sensibility (ii. p. 84). Even so, however, since sensation in its presentative aspect, and consequently the qualities of sensations, come under intellect (vol. i. p. 85), there is no ground for reserving the working of contrast, or relativity, of sense-qualities, until 'feeling' (vol. ii. p. 91). Again, '*belief*' is surely neither sensibility nor feeling in the sense of pleasure and pain, and to call it 'common ideal feeling' (ii. p. 243) is most bewildering. A still more obvious defect of arrangement is the awkward interpolation of some eighty pages on the nervous system at the beginning of vol. ii., coming thus after 'intellect' and under 'feeling'. Was it simply forgotten in its more appropriate place at the beginning of the Handbook?

Looking back to vol. i. for the general conception of consciousness, we find it a little hard to gather, owing to a certain looseness and irresponsibility of expression which Prof. Baldwin seems to have inherited from the Scottish friends to whom he owns obligation, though not allegiance (see preface to vol. i., second edition). Consciousness, he tells us, is both active and passive. "The highest" and also "the most *comprehensive* form of active consciousness" is apperception, "that activity of synthesis by which mental data of any kind (sensations, percepts, concepts) are constructed into higher forms of relation, and the perception of things which are related becomes the perception of the relation of things" (i. p. 65). From this and other statements about apperception and active consciousness, we expect the other, the passive, side of consciousness to be the sense data which are brought into connexion and unity by apperception. This is, in effect, the conception which seems *most* in harmony with Prof. Baldwin's general treatment, and it is sufficiently borne out by his view of the connexion between mind and body. It is as active—in virtue

of the unique character of the synthetic activity, which is without physiological parallel (p. 6)—that mind deserves to be the subject of a distinct science, and not a mere branch of physiology. The 'data of sense,' which Prof. Baldwin speaks of at one time as a "given manifold" (p. 319), and at another in the phrase much out of place in his psychology of an "undifferentiated sensory continuum" (p. 118), may, on the other hand, be referred back to, and causally explained by, physiological processes (pp. 27, 29, 55, 157, &c.). A doubt is, however, thrown upon this interpretation of the two sides to consciousness by the fact that in chapter iv. the terms *active* and *passive* are used for *concentrated* and *diffused* consciousness (p. 64). In the diagram illustrating the area of consciousness (p. 68), we pass from the extreme outer circle of consciousness, *viz.*, (1) the *unconscious!* through (2) the sub-conscious, (3) passive (or diffused) consciousness, (4) *active consciousness or attention*, to the innermost circle (5) apperception.

Apperception, or the "Apperceptive Function" rather, plays, as we should expect, an important part in intellect. It comprises presentation (sensation and perception) and representation (memory, association, imagination, and thought). It was a rather unfortunate oversight in the chapter on classification to give 'representative' as the alternative title for intellectual states, which are now seen to include presentative. The laws of association Prof. Baldwin reduces to two: the primary 'law of correlation,' which is a law of mental activity, and the secondary 'law of contiguity,' which finds its causal basis in physiological process. The facts brought under the first are undoubtedly of psychological value, and have been too little recognised, but it is a doubtful benefit to make the term association so wide as to cover both them and the more mechanical, or passive, connexions through contiguity.

The second volume shows a distinct advance in psychological insight, in spite of the confusion of arrangement. Prof. Baldwin has here felt his hand more free, and has made in many respects a nearer approach to a really scientific analysis of consciousness. After the digression already alluded to upon the nervous system, he gives us his general account of sensibility or feeling. It is defined "as the subjective side of any modification whatever of consciousness," or "the simple awareness of the unreflecting consciousness". To the precise mind, more information will be conveyed by the statement that "the most general characteristic of sensibility is pleasure and pain". "Simple sensibility," indeed, is "pleasure and pain," while "complex sensibility" is any complex in which pleasure and pain is an element. Obviously "complex sensibility" may have a wide range, and in effect we find it to cover a great variety of mental states from sensations, organic and special, to logical, moral and æsthetic judgments.

Sensuous pleasure and pain is defined, as might be expected from Prof. Baldwin's view of the physical basis of sensations,

through its physiological conditions. Pleasure is "the conscious effect of that which makes for the continuance of the bodily life or its advancement," pain "of that which makes for its decline". This is only partially true, for there is never the complete adjustment to environment which would make it applicable to every case; and, moreover, it does not help us to a *psychological* generalisation or explanation. The corresponding account of ideal pleasure and pains, as "the conscious effect of that which makes for the continuance of the apperceptive life or its advancement," and for "its decline and limitation" respectively, is similarly only partially true.

Under complex ideal feelings, Prof. Baldwin treats of common ideal feeling, *viz.*, interest, reality, belief, corresponding to organic sensation; and of special ideal feelings—corresponding to special sensations. These special ideal feelings comprise "emotions of activity," whether of adjustment (effort and ease) or of function (freshness, triumph, &c., hesitation, indecision, &c.), and "emotions of content," having reference to objects. This last is the largest class, embracing not only egoistic and sympathetic emotions but also "relational emotions," either logical or conceptual (systematic, ethical, religious, æsthetic). If we were to adhere strictly to Prof. Baldwin's own distinction between feeling and intellect, as having respectively reference to self and reference to external objects (i. p. 36), all the emotions of content, except the egoistic, would have to be ruled out of court.

Among the topics for which Prof. Baldwin claims originality of treatment, the account of "reality-feeling and belief" (ii. ch. vii.) is of considerable freshness and interest. He draws a very just distinction between the two. Reality-feeling is mere unchallenged presentation, existence in consciousness. It is primarily the note or *cachet* of sensations, the "sensational coefficient," because sensations are the primary material or content of consciousness. Belief is a later and more complex state, involving conscious reaction. The data for belief are (1) contrast between reality and unreality feeling, between presence and absence of the sensation, (2) need for the sensation and impulse to obtain it, (3) the gratification of that need, with the accompanying sense of security and confirmation. This account serves to bring out the important fact that the primitive consciousness does not pronounce judgment on its content—everything presented is at once accepted, and reality is simply presence. It is from contrast and contradiction within the content that doubt and belief arise, that consciousness becomes reflective and judges. Prof. Baldwin does not call attention, as we think he should, to the part played by the 'representation' of the absent sensation. It is true that the impulse, the need, may be aroused without the representation of what will gratify it, but in that case no conscious affirmation of reality (belief) will follow, but only a somewhat intensified "reality-feeling".

The "sensational coefficient" is made the basis of the belief in external reality. The features of this, as of every reality-coefficient, are intensity and uncontrollableness, and these are best realised in muscular sensations—sensations of resistance. Resistance is thus the ground of belief in external reality, while memory, as the ability to reinstate experiences of resistance at will, supplies a second criterion. Prof. Baldwin overlooks the part which consistency plays in confirming belief in even external reality, while in our opinion he overrates its place in belief in concepts and thoughts. He makes it here the exclusive basis, the "thought-coefficient". It is true that he understands by belief in this connexion only formal, logical assent, not realisation; but mere consistency does not yield even this unless it eventually leads back to premises having their roots in reality (existence). The effect of emotion, both in constraining and in colouring belief, is well recognised, and a very just comparison drawn between mere intellectual belief and what we call "realising" (p. 152). It is curious that so true a conception of this difference did not save Prof. Baldwin from the error of classifying 'belief' under feeling.

The "general conclusion" on reality and belief (pp. 168-171), and the criterion of reality there suggested, possess a considerable interest, though one not purely psychological. It lies in the hint given of a possible solution of some of the problems of modern thought. There are many indications that the new basis of faith, if there is to be one, will be psychological, that it will be based on the 'needs' of our nature, and will involve the recognition of sides other than the rational. The establishment of such a psychological basis demands, however, a more thorough criticism and analysis of 'needs' than we find in Prof. Baldwin's psychology. The number of 'original tendencies' and 'ultimate feelings' must be reduced, or their claims established instead of taken for granted. Whatever is meant by rational, moral, or æsthetic intuitions, empirical psychology cannot admit them as primitive and underived until every attempt to reduce them to simpler elements has proved futile.

A comparatively brief account of 'will' completes the work. Here again, though the analysis, and especially the importance attributed to 'reaction,' has its interest, we must take exception to the large number of original impulses or appetences (p. 322). Let us recognise the complex impulses, or rather the complex nature of the objects which arouse impulse in the developed nature, by all means; but recognition is not all. The business of psychology is to explain, to reduce to simpler and more general elements. We miss any adequate appreciation of this duty of psychology in Prof. Baldwin's work. He accepts the developed consciousness as he has it, or thinks he has it, and concerns himself with its analysis and description, but entirely leaves aside the question of its growth and development. This is a serious defect in a handbook of psychology. A worse one is

the failure to recognise the actual scope and limitation of the subject-matter. If, as Prof. Baldwin admits, the method proper to psychology is introspection, then the subject-matter is consciousness, not as *function* but as content. It may be legitimate and desirable to *infer* an activity apprehending and combining this content, and is so if the inference helps us to arrange and explain the data. But such activity is not itself given among the data. Introspection knows nothing of consciousness as activity, as "function," and it is a complete inversion of right method to begin a psychology with an assumption and account of *functions*, whether intellectual or volitional, whether apperceptive or rational. We look in vain throughout this work for any conception of the content of consciousness as a whole, as the subject-matter of a distinct science. Secure in his formal 'unity of function,' Prof. Baldwin has no scruple in admitting a break in the material 'unity of content,' in letting sensation and feeling pass into physiological process. A notable instance of this attitude is the way in which he disposes of the hypothesis of sub-consciousness (i. pp. 45-58), the force of which as an application of the law of continuity he entirely fails to appreciate.

In spite, however, of its serious defects, which may be lumped together as over-hastiness and want of a sound-guiding principle, these two large volumes give evidence of considerable acumen, of omnivorous reading, and, in the second volume, of power of original thought.

MARY E. LOWNDES.

Die neuen Theorien der kategorischen Schlüsse. Von Dr. FRANZ HILLEBRAND. Wien: Hölder, 1891. Pp. 102.

Although, according to its title, Dr. Hillebrand's book is concerned with modern theories of categorical inferences, only about half of its hundred pages are really occupied with inference, mediate or immediate. For the theory of Syllogism is, as the author justly remarks, necessarily dependent on the theory of Judgment; hence he devotes the long second chapter to a consideration of the "Nature of Judgments".

Dr. Hillebrand requires the recognition of Judgment as a primitive psychical act; and this he does not find even in Hume, Mill, and Herbart, whom he regards as coming nearest to it. In his view, it is Brentano who has the merit of being the first to discern the real nature of Judgment, and to discover that not only is it inadequate to describe Judgment as a combination of ideas, but that this characteristic is not even essential to Judgment. Brentano is led to this view by a consideration of so-called Existential Propositions; *e.g.*, *There is an A*, or *A is*. These, he observes, cannot be explained as a combination of the idea of A with the idea of Existence—they indicate simply the

acceptance (*Anerkennung*) of A, and in the acceptance of A the idea of A's Existence is included—hence, since *A is* is a Judgment, Judgment does not necessarily include any combination of ideas.

According to Brentano's psychological analysis, all mental phenomena may be divided into three classes: Acts of Ideating, Judging, and Feeling (*Acte des Vorstellens, des Urtheilens, der Gemüthsthätigkeit*). These are distinguished from one another by different relations [of the mind] to an immanent object. The difference of relation which constitutes the distinction between ideating and judging is that, in judging, the "immanent object" is so regarded as that it may be accepted in a true statement (*cf.* §§ 16, 17). And that which stands in this relation to the mind is what we call "Existent"; the relation itself in which judging consists, being the source of the idea of existence, whereas (according to Dr. Hillebrand) other theories of judging deduce Judgment from the idea of Existence, and are therefore incapable of affording any explanation of the *fons et origo* of this idea. Since these other theories regard judgments as analysable into elements which are something other than judgment, they may be called Allogenetic, while Brentano's view, which regards it as ultimate, may be called Idiogenetic.

In Brentano's view, then, the mind in every judgment accepts some object as existent, and regards the proposition expressing the judgment as true. The acceptance of the object as existent, and the truth of the assertion in which there is this acceptance, are bound up together—where there is the one there is the other. If this might be understood to mean that every proposition "by its very nature lays claim to truth," and that every proposition implies the acceptance (as existent) of the matter referred to, the doctrine seems to me indisputable, though quite inadequate as a theory of Judgments or Propositions. For when we ask: *What* is it which is asserted in this truth-claiming and existence-implicating form? we find no answer; unless it is to be said that the *assertion* itself is asserted, or the *truth* of the assertion, or the *existence* of that which is referred to. Indeed, this last is the answer which is very strongly suggested by the "Existential" form of Proposition—although it is, with specially good reason, disclaimed by Dr. Hillebrand. Again, how can we deny the existence of that which, being the matter of judgment, has that unique relation to the judging mind in virtue of which we call it "existent"? (*cf.* p. 27, § 17, and p. 25, line 2). But do we not make such a denial in *e.g., There is no Sp?* If this proposition does not deny the "existence" of Sp, how is it to be interpreted? And if we admit that Existence can be denied, then that which has its existence denied must be ideated in order that it may be judged (*cf.* p. 20). *What* is it that is so ideated or thought of? Let us, however, put aside this question, and go on to consider some developments of Brentano's view as worked out by Dr. Hillebrand.

As a result of examining Existential Judgments, he denies that in judging we must "put two ideas together"; hence he holds that propositions need not be two-membered (*zweigliedrig*), and adopts Existential Propositions as the truest expression of judgment. Thus, instead of *A is X*, *A is not X*, he prefers to say, (1) *There is AX* or (2) *AX is*, (3) *there is no AX* or (4) *AX is not*. But the *There is* in (1) and (3), and the *is* in (2) and (4) are ambiguous, and it is a little hard to see what (2) and (4) mean unless the *is* = *exists*; or what (1) and (3) mean unless the *There is* signifies either vaguely (*a*) AX exists [does not exist] at *some* time and place; or (*b*) AX exists [does not exist] at a *definite* time or place. Dr. Hillebrand, however, emphatically disclaims this interpretation; and in the last chapter we find it declared that the expression *This plant* is a Judgment (p. 97 *top*), the pronoun *this* implying that acceptance in which Judgment consists. But if, *e.g.*, *This plant* is a judgment, what is to be said of the sentence *This plant is evergreen?* Again, to say that *This plant* is a judgment is, of course, to reduce the *is* and *There is* of Existential Propositions to mere signs of Judgment. But such reduction seems unwarrantable and paradoxical; and, moreover, if these are mere signs of Judgment (a Judgment being expressible by a solitary definite name), what *is* a Judgment, and in what respects does a Judgment differ from an idea?

Again, Dr. Hillebrand says (p. 28), that just as the Existential Proposition *S is* expresses the simple acceptance of S, so the Categorical Proposition *S is P* expresses the simple acceptance of the object (*Materie*) SP. But if it is on the strength of *S is P* that we admit an object SP, it seems obvious that *S is P* must be understood, in the first instance, as an assertion of Identity in Diversity—the numerical identity, namely, of *one* object, which both S and P denote or refer to, in the diversity of characteristics indicated by the diversity of the symbols S and P. But if this is the force of the copula in *S is P*, it is wholly different from that of the Judgment-sign *is*; and though *S is P* may explain *SP*, it does not explain SP *is*.

When from a consideration of the most generalised forms of Categorical Proposition—*S is P*, *S is not P*—we pass to a consideration of the more specialised forms, A—E—I—O, further difficulties arise. The classification suggested by the original twofold division would be into (1) A, I (*e.g.*, *All R* (S) is P, *Some R* (S) is P): (2) E, O (*e.g.*, *All R* (S) is not P, and *Some R* (S) is not P). But the primary distinction now taken is between A and E on the one hand, and I and O on the other. A and E are both regarded as negative, as not "accepting" but *denying* objects with certain characteristics; All R is Q = There is no Rq (Rq—), No R is Q = All R is q = There is no RQ = (RQ—). Both I and O are regarded as affirmative.

And here again we have to proceed as in the case of S is P, S is not P (unless indeed we reject altogether the universally admitted "two-membered" form of Categorical Proposition).

In order to extract There is no Rq, There is no RQ, from A and E respectively, E has to be first understood as a *denial*, and A as an *assertion*, of Identity in Diversity. We can deny that there is R which is not Q, only because A asserts that to every R the appellation Q is applicable; and it is only because E denies the identity of the objects referred to by R and Q respectively, that we can refuse to admit objects in which there is a combination of the characteristics signified by R and by Q. And similar considerations apply in the cases of I and O.

In the fifth chapter, on Compound or Double Judgments, we learn that though A, E, must be treated as purely negative when they are really Simple Judgments, yet in the overwhelming majority of actual cases, A and E are Double Judgments, and besides denying Sp and SP respectively, also accept S. The two so-called assertions are extremely different from each other; and it does not clearly appear how A (or E) is to be analysed so as to get the two out of it—and further, we are given no test by which to know the Simple from the Compound Judgments, though the differences between them are extensive and important when they come to be used in inference.

It would seem that either Prof. Brentano and Dr. Hillebrand must reject *S is P* and *S is not P* as general forms of affirmative and negative propositions, and hold to the traditional view of Logic as a Logic of Classes; or they must give up the grouping of propositions into I, O, and A, E, together with the corollaries involved. But to accept the last alternative would be to put aside the whole further development of the doctrines of Opposition and Inference with which Dr. Hillebrand provides us.

As regards Opposition, we learn that the only item of the traditional doctrine which can be admitted is the theory of Contradiction. A and O, E and I, are still to be regarded as incompatible and together exhaustive pairs of propositions. But the doctrines of Sub-alternation, of Contrariety and of Sub-contrariety do not hold. A and E may be true together, hence also I and O may be false together. In the denial of both Sub-contraries (Some R is Q, Some R is not Q), as in the affirmation of both Contraries (All R is Q, No R is Q), the non-existence of R is involved—whence it follows that the universe is *r*, a result that is not without difficulty. In these cases what is it that is denied, what is it that is the *matter* of the judgment? The validity of inference from A to I and from E to O is denied. As Dr. Hillebrand declares the *Dictum de omni et nullo* to be nothing more than the Principle of Sub-alternation (in which, I think, he is right), this view of Sub-alternation strikes at the root of the whole traditional doctrine of Syllogism. But something very like what has been rejected as Sub-alternation is brought back as the second of two ostensibly new rules of Immediate Inference which are given at the end of ch. iii. p. 69. This rule is to the effect that any "negative" judgment (A or E) may increase its Matter (*Materie*)—*i.e.*, that

any A or E may admit fresh determinations, positive or negative. Thus, from any assertions concerning a Class, we may infer a similar assertion concerning any sub-division of that Class—*e.g.*, from *All R is Q* (*There is no Rq*), I can infer, *All RX is Q* (*There is no RXq*), RX being a sub-division of R, that is Some R. Dr. Hillebrand's rules, as they stand, do not appear to apply to Mathematical Propositions.

Simple Conversion is said to be in all cases possible, but a merely verbal change, since it cannot matter whether I say, *There is SP* or *There is PS*, *There is no SP*, or *There is no PS*. The legitimacy of such Simple Conversion, however, as a general logical doctrine, is entirely given up in Anm. iii. p. 63, where it is said that in certain cases Simple Conversion would be illegitimate—*e.g.*, in the case of the proposition, Some man is dead.

Obversion ("Æquipollence") is allowed to be possible, but a mere verbal change, in the case of A and E—it is regarded as illegitimate in the case of I and O. Conversion per Accidens and Contraposition of E are not admitted as legitimate. Contraposition of A is allowed, and a (so-called) Contraposition by which *Some* S is not-P is changed to Some-not P is S. Dr. Hillebrand's conclusion is that "of all the Immediate Inferences which have been set out by logicians, it is only the Inferences *ad contradictoriam* which deserve the name" (p. 67).

After the doctrines of Simple Obversion and Conversion, we are introduced in chap. iv. to what are called Immediate Inferences from two premisses. They are of two forms (*cf.* pp. 70, 71):—

$$(1)\quad \left.\begin{array}{l} \mathrm{Ab}\ - \\ \mathrm{A}\ + \\ \overline{\mathrm{AB}}\ + \end{array}\right\} = \left\{\begin{array}{l} \text{There is no Ab.} \\ \text{There is an A.} \\ \text{There is an } \overline{\mathrm{AB}}. \end{array}\right.$$

$$(2)\quad \left.\begin{array}{l} \mathrm{AB}\ - \\ \mathrm{Ab}\ - \\ \mathrm{A}\ - \end{array}\right\} = \left\{\begin{array}{l} \text{There is no AB.} \\ \text{There is no Ab.} \\ \text{There is no A.} \end{array}\right.$$

Of both of these it may be remarked that the conclusion decidedly is not obtained from the premisses alone, but from them taken in conjunction with the Proposition:—

A is B or b.

They look like distorted examples of the familiar Disjunctive Syllogism.

From (1) and (2), by substitution of M P S (and their negatives) for A B (and their negatives), we obtain twenty-four "Syllogisms with four Terms"—from (1), Syllogisms, having in Hillebrand's terminology one affirmative (and one negative) premiss, and an affirmative conclusion (in the traditional terminology, a particular premiss and conclusion); from (2), Syllogisms having (according to Dr. Hillebrand) two negative premisses and negative conclusion (in the ordinary use of logical terms, having universal premisses and conclusion). In these twenty-four are included all the traditionally

recognised forms of valid Syllogism, except Darapti, Felapton, Bramantip, Fesapo, which have universal premisses with a particular conclusion, and are excluded by the view that Subalternation is inadmissible. The nine extra moods are obtained by substitution of negative for positive Terms—s for S, and so on.

Two new rules of Mediate Inference are put forward—(1) that all valid Syllogistic moods must have four Terms, and (2) that *ex mere affirmativis nil sequitur* (which includes that from two negative premisses we get a conclusion, and from one negative premiss an affirmative conclusion). But these rules, strange as they sound, give us only Syllogisms which the traditional Logic does (or would) recognise as valid, and (2) proves on examination to be equivalent to the old rules (7 and 8) about particular premisses; and (1) does not admit four "Terms" in the sense in which they are excluded by the first of the old syllogistic rules, as appears from the fact that the new Syllogisms are all reducible to valid Syllogisms with only three "Terms" (in the sense of Class-names). And when a proposition is expressed as MP−, or SM+, MP and SM being complex names for some one object or group, the appropriateness of calling each constituent of either combination a *Term* is not quite obvious.

What is really novel in this Syllogistic scheme is the exclusion of any Syllogism with universal premisses and particular conclusion; and the substitution for the old *Dictum de omni et nullo* of the Laws of Contradiction, and Excluded Middle, and of the two rules of Immediate Inference already referred to above—of which, however, one, as already observed, seems to be closely akin to the rejected *Dictum*.

I think that Brentano's view is peculiarly interesting, because he has felt strongly certain defects of the traditional doctrine of Judgment and Syllogism, and seems at several points to have come within measurable distance of remedying them. He feels that to describe Judgment as the combination of two ideas is unsatisfactory, because there is *one* thing or group of things which is referred to in every Judgment (most obviously in Non-relative Judgments), and constitutes the *Materie* of that Judgment. He sees, again, that the object before the mind in ideating and in judging is the same—that in perceiving, say *SP*, and in judging *S is P*, the same identical thing (or group) is the object of my mental activity, but that there is a profound difference between ideating and judging—such a difference that Judgment is essentially unique and ultimate. But he has not succeeded in providing a satisfactory doctrine of Judgment in the place of those current doctrines which he so acutely criticises. And since—as Dr. Hillebrand has observed—the theory of Inference must depend on the theory of Judgment, if the latter is unsound the former must be unsound. That this actually is so in the logical scheme worked out by Dr. Hillebrand in the present book is what I have tried to show.

E. E. Constance Jones.

VII.—NEW BOOKS.

Distinction and the Criticism of Beliefs. By Alfred Sidgwick. Longmans, Green, & Co.

In this book, which is in the press and will shortly be published, the problem how to deal with ambiguity of language is treated in a somewhat special manner. Ambiguity is only *effective* so far as it is subtle; words (like "pound") which mean widely different things are not in practice confused, but rather words which cover meanings most nearly alike; and accordingly it is in artificial sharpness of distinction (in the continuity of Nature and the discontinuity of Language) that the source of the most effective ambiguity is to be found. Common-sense exercises a kind of tact in using distinctions, treating them with considerable lightness; but so unconscious a method is naturally rather haphazard in its operation, and the main purpose of the book is to supplement 'common-sense tact' by making it conscious of its reasons. In the course of the inquiry several other topics of philosophical interest are discussed; chief among these are Controversy, the nature of Language, and the destructive power of Scepticism.

The Nuptial Number of Plato. By James Adam, M.A. Cambridge University Press, 1891. Pp. 79.

'The present essay claims to be a complete solution of the number of Plato' (Preface). I must leave the mathematics in it to mathematicians, and will only ask whether the solution itself, or the general reasoning by which it is reached, are such as to justify its claim to completeness. Mr. Adam's view of the main truth which Plato wishes to express seems to be this: that the maintenance of a perfect human society depends on the understanding and observance of a law of generation, to which man along with other animals is subject; that according to this law there are certain regularly recurring periods at which sexual union should take place if it is to produce the best possible offspring; that not only the particular organism man, but the whole universe, conceived as one all-containing organism, has likewise its periodic times of generation, and that this generation of the universe controls that of all the living things which it contains. So far as this I go with Mr. Adam, but the details of his interpretation puzzle me. It is based throughout upon the assumption (for it *is* an assumption, though Mr. Adam speaks (p. 46) as if he had proved it) that in determining the right periods for the generation of children Plato was guided by the period of human gestation. 'What he did was probably something of this kind. Taking the shortest period of gestation as his unit of measurement, *viz.*, 216 days, he divided a woman's life into periods of 216 days, from the day when first she was able to conceive a child. . . . During the time when Plato allowed woman to bear children (*i.e.*, between the ages of 20 and 40) she would, as far as the claims of maternity or other circumstances would permit her, unite with a bridegroom on the first day of each of these cycles, and possibly on other days within the cycle in which the number 6 predominated' (pp. 51-52). But if this is Plato's meaning, why does he say that human wisdom, however great, will sooner or later fail to calculate the right times for marriage, and that owing to this failure society must

sooner or later begin to decline? Given the starting-point suggested by Mr. Adam, 'the day when a woman was first able to conceive a child,' the subsequent calculation would seem to be easy. Where then does Mr. Adam suppose the difficulty to lie? 'The method of fixing the times of marriage,' he says, 'fails in the end, from no fault of our rulers, but *διὰ τὸ μὴ μένειν μηδὲν ἀλλ' ἅπαντα ἕν τινι περιόδῳ μεταβάλλειν*' (p. 44): 'Be our archons never so perfect, the ageing world will make their state decay' (p. 67): 'The race of man degenerates as the world grows old and weary of child-bearing' (p. 79). Let us then assume with Mr. Adam that Plato here had in his mind the idea which is developed in the *Politicus*, that the universe alternately moves forwards and backwards, waxes and wanes, for equal periods of time; let us assume that each of these pairs of periods is 72,000 years, and that this number is 'built up from the *πυθμήν* of the number 216,' which expresses in days a period of human gestation: what is the import of all these assumptions? 'As surely,' says Mr. Adam, 'as this goodly universe is begotten once every 72,000 years . . . so surely are there times and seasons for begetting man; for what is man but the universe epitomised? And just as the moment of the world's conception is discovered from its period of incubation, 36,000 years, so the right season for begetting children is to be determined from the period of gestation among mankind' (p. 78). We need not quarrel with the circularity which Mr. Adam himself admits in this reasoning; we may agree with him that 'when man discovers, or thinks he discovers, that the conditions which regulate his own nature are the laws that rule the whole, he realises, far more surely than before, that the conditions of his own nature are likewise laws; not to be violated without insult to the harmonies of heaven' (p. 78). But how is man to derive this moral support for his acts from the contemplation of a law of nature, when it is that very law which ultimately renders his acts ineffectual? It is like saying to him: 'If you wish to beget children at the right times, observe the period of human gestation; on reflexion you will find that this period is repeated on a vast scale in the universe; this discovery will strengthen you to resist the temptation to unregulated sexual indulgence; at the same time I must warn you that, however great your wisdom and self-control, the periodic changes which occur when the universe issues from and returns to chaos will baffle all your calculations and produce inevitable degeneracy in your offspring'. I may not have understood Mr. Adam rightly, but his conclusion does not seem to deserve the enthusiasm with which he regards it.

Nor is the reasoning by which he arrives at it convincing. The most prominent and characteristic idea in his essay is 'that the *περίοδος* of the *θεῖον γεννητόν* seemed to Plato to control the *γεννητά* which are within it'; this he considers to be 'the whole point' of the passage (p. 48, note 4). On what grounds? They are to be found partly in his interpretation of the clause *ὧν ἐπίτριτος πυθμὴν κ. τ. λ.*, partly in a combination of the whole passage with passages in the *Politicus* and the *Timæus*. As regards the former, the following difficulties amongst others suggest themselves: (1) He purports to have 'shown' from Aristotle's *Politics* that the number intended in the clause *ἐν ᾧ πρώτῳ κ. τ. λ.* is 216, taking Aristotle's words *λέγων ὅταν ὁ τοῦ διαγράμματος ἀριθμὸς τούτου γένηται στερεός* to be explanatory, not of *τρὶς αὐξηθείς*, but of the antecedent implied in *ὧν*. But if (as is necessary to his argument) *ἐπίτριτος πυθμήν* in Aristotle's quotation from Plato means the Pythagorean triangle with its area-number 6, how in Plato himself can it mean 12 (3 + 4 + 5)? Has he not first deduced 216 from a certain

meaning of *ἐπίτριτος πυθμήν*, and then deduced a different meaning of *ἐπίτριτος πυθμήν* from 216? (2) What is the sense of saying, as he supposes Aristotle to do, that the period of gestation is the 'beginning' of change in the ideal state? He emphasises a distinction between '*cause* of change' and '*process* of change' (pp. 42 and 68), but he does not make clear how the two are related. (3) Why should Plato have said *ἐπίτριτος* when, as Mr. Adam allows (p. 24), the *πυθμήν* is really *ἐπίτριτος καὶ ἐπιτέταρτος*? Is it not a queer way of defining a number to qualify it by an epithet which is both inaccurate and superfluous (see p. 25)? (4) What evidence is there, in Plato or elsewhere, that *πεμπάδι συζυγείς* can mean 'multiplied by five'? (5) Is it likely that *τρὶς αὐξηθείς* means here 'raised to the fourth power' when *τρίτη αὔξη* had 'become a stereotyped phrase for third dimension' (p. 27)? If the *τρίτη αὔξη* of 9 in *Republic*, 587*d*, means 9^3, the 'increases' being reckoned from unity, why should not *τρὶς αὐξηθείς* be similarly reckoned here? Some of Mr. Adam's reasoning is ingenious and plausible, but it does not justify such phrases as 'absolute certainty,' 'I have shown,' 'I can prove it to the hilt' (pp. 22, 24, 25).

As regards the other source of his conclusions, he is doubtless right in holding that Plato is best explained from himself, but he does not sufficiently distinguish between illustration and proof. Take, for instance, his treatment of *τελεῖος ἀριθμός*. He first 'infers provisionally' (p. 48), from the fact that the same phrase is used in the *Republic* and the *Timæus*, that it means the same in both, promising that this shall be 'fully established' later. But the only 'establishment' that he gives is an interpretation of the myth in the *Politicus*, which, though interesting and suggestive, is certainly not conclusive. To mention one or two difficulties: (1) He makes much of the parallelism between human and cosmical generation; but whereas the right period for the former is supposed to be the period of gestation, the generation of the universe takes place at periods of *twice* its period of gestation (p. 77). (2) He treats the statement in the *Politicus* that God 'retired to His watch tower' as parallel to that of the *Timæus* that God 'abode in His own nature'; but in the *Timæus* the work of the secondary divinities begins with the retirement of the Creator, in the *Politicus* (272*e*) they accompany Him in his retirement. (3) The fanciful interpretation of *ἀριθμὸς γεωμετρικός* as the number 'which measures the earth' (p. 76) would, if it were true, make the periodic changes of the earth the same as those of the universe.

It is to be hoped that Mr. Adam will continue to study Plato, but that while retaining all his enthusiasm he will abate some of his dogmatism.

Anthropological Religion. The Gifford Lectures delivered before the University of Glasgow in 1891. By F. Max Müller, K.M., Foreign Member of the French Institute. London: Longmans, Green, & Co., 1892. Pp. xxvii., 464.

The third series of Glasgow Gifford Lectures do not present many points of interest even to the professed student of comparative psychology or philosophy of religion, while they make almost no appeal to the philosophical expert, as indeed the author himself seems to indicate (pp. 338-9). In two previous courses natural religion generally, and physical religion—the religious ideas connected with the attribution of causality to external phenomena—were discussed. The present work carries the investigation a step higher. Physical religion leads man to a "belief in one Superior Agent or God" (p. 181), but it leaves an "abyss separating God from man" (p. 182). Anthropological religion, on the

other hand, comprehends "the history of the various attempts at discovering something infinite and divine in man or mankind, beginning with the first surmises of the existence of something different from the body, and culminating in a belief in the divine sonship of man, the True Keynote of the religion of Christ" (p. 115). After some general considerations, occupying Lectures I.-IV., this evolution is traced from ancestor-worship, through animism in its various stages, and finally to the "apotheosis of the Divine in man". Throughout, the lectures are marked by the same wealth of illustration—especially from Indian sources—the same abundance of anecdote and reminiscence, and, occasionally, the same poetic fervour (*e.g.*, pp. 107 ff.) which rendered their predecessors so pleasing to the hearer. They have also similar defects. The psychology is not always what it might be (*e.g.*, Lect. VIII.). There are many remnants of Physical religion in Anthropological, while the latter contains a very great deal of Psychological religion, the subject which has just been treated in the concluding course. There are also some curious anomalies of detail. The "revelation of Divine Sonship in Christ" was hardly reached through Greek stages, as is implied; and even if it had been, our author would find it difficult to reconcile this "apotheosis" with the fact, upon which he rightly insists, of the Jewish aversion to the worship of a Divine which evinced itself in human form.

Studies in Hegel's Philosophy of Religion, with a Chapter on Christian Unity in America. By J. Macbride Sterret, D.D., Professor of Ethics and Apologetics in the Seabury Divinity School. London: Swan Sonnenschein & Co. Pp. xiii., 348.

The general purport of this book is well described in the Preface. "It is written with faith and in the interests of '*The Faith*,' though demanding an almost antipodal orientation or point of view to that of both deistic orthodoxy and ecclesiasticism." "It is mere time-serving to manufacture evidences where there are none." "It is *infidel* to refuse to welcome the Light lightening every man and every institution that comes into the world." "To discover the concrete Infinite immanent in, vitalising and educating, man throughout his history" is to supply "the key to the vital rationality of religion, interpreting and vindicating at their relative worth the many elements which, when put forth separately, are easily overthrown by scepticism". The work of Hegel "contains the philosophical key to the heart of the matter," reconciling "reason with religion by finding reason in religion and religion in reason". Dr. Sterret has performed his task well. His exposition of Hegel is accurate, and for the most part lucid; and his free adaptations and applications of Hegelian ideas are always interesting and valuable.

An Essay on Reasoning. By E. T. Dixon. Cambridge: Deighton, Bell, & Co., 1891. Pp. 88.

The author of this essay has previously shown great acuteness in criticism of the procedure of geometricians, and logical thoroughness in deducing a system of geometry from a few assertions with respect to *direction* and *position*. His *Foundations of Geometry* present the subject in a form probably superior to that of any elementary text-book. In the present work he aims at reinforcing his contention that the fundamental assertions of a purely deductive science are *Implicit Definitions*—not Axioms depending upon our assigning real import to the terms special to the science. The contention is of course not new, but the

test for determining the logical soundness of such an Implicit Definition seems ingenious. "None of the assertions must be independent of the meaning of the term [to be defined], and together they must not imply anything which is independent of that meaning" (p. 55). But how can we legitimately make these assertions without first assigning a *meaning, i.e.*, at least *subjective import* (as the author expresses it), to the term? After having tested the truth of the assertions, and having found that they contain no information which does not depend on our giving that particular subjective import to the term, it is true that we can temporarily lay aside all thought of the meaning, and proceed to make logical deductions. But the arbitrariness of the assertions applies only to the choice of the term or symbol to denote the particular concept. That the assertions are true of the concept is not arbitrary.

The rest of the essay appears to me independent of the main thesis, and to contain much error, confusion, and obscurity. Mr. Dixon expresses clearly enough the familiar commonplace of Logicians that, if we start with an arbitrary list of 'attributes,' the list of 'things' possessing those attributes is not arbitrary; and conversely. He, then, appears to recognise that four cases will arise, according as we have names of attributes or things whose application is determined directly or indirectly. But for simplicity he confines attention to the names of *things*, and considers throughout the work the two cases in which the application of these names is determined directly or indirectly. But by this procedure he destroys the reciprocal relation that he began by clearly enunciating. Every parallel that he draws between the two cases, therefore, breaks down, and the work becomes crowded with errors.

On the treatment of Propositions and Syllogism Mr. Dixon merely offers a confused rendering of the "Identification" interpretation. His whole work here is marred by the assumption that in a proposition the subject and predicate must both be determined denotatively or both connotatively. His own example (on p. 10), "Aristotle is-identical-with some man of extraordinary industry," expresses an *identity*, to which the most natural way of assigning *real import* is to define the subject denotatively and the predicate connotatively.

Mental Suggestion. By Dr. J. Ochorowitz, with a Preface by Charles Richet. Translated from the French by J. Fitzgerald, M.A. New York: The Humboldt Publishing Co.; London Agents: Gay & Bird. Pp. 369.

This translation may be recommended to English readers who have interested themselves in the work of the Society for Psychical Research. The account of the personal experiences which convinced Dr. Ochorowitz of the reality of "mental suggestion" does not occupy more than a small part of the book; but he has judiciously introduced this by two chapters in which he shows a full acquaintance with the various special causes of error, against which an investigator in pursuit of mental suggestion or thought-transference has to guard. Among these may be noted—besides mal-observation and conscious deception—the suggestions given by unconscious indications, natural associations of ideas tending to cause coincidence between the thoughts of the experimenter and those of his subject, the hyperæsthesia and hypermnesia that are sometimes manifested in the hypnotic state, and the specialised sensibility and peculiar imitativeness of a "magnetised" subject in relation to his "magnetiser". These and other sources of error Dr. Ochorowitz illustrates by a number of cases of merely apparent or merely

probable "mental suggestion" drawn from his own experience. Part ii., about half the book, contains a critical selection and discussion of facts recorded by other—chiefly French—investigators, tending to confirm and extend the conclusion to which Dr. Ochorowitz's own experiments have led him. Finally, in part iii., after a full discussion of other hypotheses, old and new, he concludes by indicating the lines on which a scientific explanation of his facts is to be sought. To say that the translator's English is uniformly correct and elegant would be too indulgent; but it is always readable, and appears to be substantially accurate.

La Morale de Spinoza. Examen de ses Principes et de l'Influence qu'elle a exercée dans les Temps modernes. Par RENÉ WORMS, ancien Élève de l'Ecole Normale superieure, Agrégé de Philosophie. Paris: Librarie Hachette et Cie., 1892. Pp. 331.

Spinoza exercises a potent and wide-spread influence on the thought of the present day. But one part of his teaching is comparatively neglected, and this is the very part which ought to interest us most—his practical Philosophy. As exhibiting in a clear light the extraordinary originality and value of this aspect of his system, the present work deserves cordial welcome. It consists of two parts, the first being a critical exposition of the ethical doctrine of Spinoza, and the second a historical survey of the influence of this doctrine on later thinkers. The exposition is accurate, clear, and extremely well written. M. Worms holds that Spinoza has combined in a higher unity the three leading ethical principles, which in other systems are separately emphasised—the egoistic, the altruistic, and the religious or metaphysical. The egoistic principle is represented in his philosophy by the impulse to self-realisation which constitutes the essence of every individual; but the satisfaction of this impulse is not to be found in the pursuit of external goods which continually leads to limitation, thwarting, and curtailment of our being by other finite existences, and especially by our fellow-men. It can only lie in the inner freedom of an activity which has no dependence on things external to the self. Hence the supreme and adequate satisfaction of the self-realising impulse is the love of God, as the immanent cause of our being. But the love of God necessarily includes the love of our fellow-men; for the same immanent causality which constitutes our being also constitutes theirs. In the historical part of his work M. Worms shows in a very interesting way how now one and now another of these three aspects of Spinoza's doctrine has been seized upon and made predominant by subsequent writers. But he shows a disposition to find Spinozistic affinities where they do not exist. Helvetius and Bentham remind him of Spinoza, because they erect an altruistic superstructure upon an egoistic basis. This seems to me to be entirely erroneous. The self-love which forms the point of departure of these writers is essentially distinct from the self-realising conatus. It consists in that very search after external goods which, so far from being identical with the conatus, is, according to Spinoza, merely a mistaken method of attempting to satisfy it. Accordingly, the derivation of altruism from self-love in Helvetius and Bentham has no affinity whatever with its derivation from the impulse to self-realisation. Good-will to our fellow-men is a means of gratifying self-love because it awakens in them good-will to us with all its manifold consequences. But good-will is, according to Spinoza, a satisfaction of our highest need, not because of its external consequences, but by its intrinsic nature as essentially bound up with the love of God. M. Worms brings into

clear light the contrast between the ethics of Spinoza and the ethics of Kant. But he fails to see that they are essentially akin, inasmuch as both regard the free self-realisation of reason as the highest good. This alone made it possible for the two lines of thought to meet and blend in post-Kantian philosophy. The mode in which this fusion took place in Fichte, Schelling, and Hegel is extremely well brought out by M. Worms. On the whole he may be congratulated on having produced a very readable book, and one well worth reading.

Esprit et Liberté. Par PIERRE-AUGUSTE BERTAULD, Ancien Élève d l'École normale supérieure, Professeur honoraire du Lycée Condorcet, et Ancien Membre du Conseil académique de Paris. Paris: F. Alcan, 1892. Pp. 458.

This book follows the same general lines as the author's *Etude Critique des preuves d l'Existence de Dieu.* It treats of the controversy concerning the existence of a soul, in which M. Bertauld takes the affirmative side. But he is convinced of the utter futility of all attempts to prove absolutely the thesis of Spiritualism by demonstrative argument. Accordingly his work is two-edged. On the one hand, he points out the logical flaws of the various arguments advanced by Descartes, Condillac, Jouffroy and others. On the other hand, he tries to show that in many cases the ideas, which form the basis of their ratiocination, have a value and relevance independent of the validity of the arguments themselves considered as formal demonstrations. Descartes and his successors have, according to M. Bertauld, signalised many facts of consciousness which point to the spiritualistic view as the most natural and probable hypothesis, although they cannot place it beyond the reach of doubt. In particular, they have shown that the most favoured alternative hypothesis, materialism, presents insuperable difficulties. For example, materialism is, in M. Bertauld's opinion, quite unable to explain the moral law except by treating it as an illusion. A considerable portion of the book is occupied in discussing the freedom of the will. The author identifies freedom with spontaneity or autonomy, and argues forcibly against indeterminism. His work will be found interesting and valuable by all who do not regard the question of which it treats as obsolete.

Les Lois Sociologiques. Par GUILLAUME DE GREEF, Docteur agrégé à la Faculté de Droit. Leçons D'Ouverture, École des Sciences Sociales, Université de Bruxelles. Bruxelles: Librairie Centrale des Sciences, 1891. Pp. 63.

In this brief Dissertation Dr. Greef (already known as the author of an *Introduction à la Sociologie*, and of several other works on cognate subjects) discusses the place of Sociology among the Sciences and the method of its study. His point of view is mainly that of Comte, but he introduces several interesting modifications into the teaching of his master. In the arrangement of the sciences, for instance, he is much more prepared than Comte was to recognise a distinction between the *πρότερα πρὸς ἡμᾶς* and the *πρότερα τῇ φύσει*—between the historical and the logical order of their development. He insists, further, on a distinction between both these orders and the educational order (*l'ordre dogmatique*), which he considers to partake to some extent of the character of both. Instruction should proceed partly along the line of natural historical development, but should at the same time seek to make apparent the logical connexion and subordination of studies.

While acknowledging these distinctions, however, Dr. Greef seems to think that the only essential difference between the historical and the logical order is that, while the latter is strictly serial, the members of the series in the former are partly simultaneous. The actual classification which he gives is based on that of Comte, beginning with Mathematics and proceeding through Astronomy, Physics, and Chemistry, to the science of life. On reaching this point, however, he introduces considerable modifications. After Chemistry he places Physiology (Vegetable and Animal), then Psychology (*Physiologie psychique*) including Logic (!), then Economics, then *Génésique* (the science of Population), then Æsthetics, then *Croyances* (Beliefs—(*a*) religious, (*b*) metaphysical, (*c*) positive), then Ethics, Law, Politics. He apparently regards this as the logical arrangement; but probably it will strike most readers as being rather a *dogmatic* arrangement.

With special reference to Sociology, Dr. Greef considers that its method of treatment ought to be strictly inductive. He believes that experiment might be to a large extent used in sociological investigations —for instance, in dealing with the problem of the limitation of the hours of labour. Unhappily he merely indicates this possibility, without explaining precisely how he conceives it should be done.

The last 20 pages of Dr. Greef's pamphlet are occupied with illustrations of sociological laws, drawn from the various departments which he has enumerated—*Economique*, *Génésique*, &c.

The pamphlet is one of considerable interest, though of course rather in the way of indicating the lines on which Dr. Greef is working than in that of supplying a satisfactory discussion of any particular points.

Die Probleme im Begriff der Gesellschaft bei Auguste Comte im Gesammtzusammenhange seines Systems. Inaugural-Dissertation der philosophischen Facultät zu Jena zur Erlangung der Doctorwürde vorgelegt von Hermann Lietz. Jena: G. Neuenhalm, Universitäts-Buchdruckerei, 1891. Pp. 97.

This Dissertation may be taken as one of several indications of an increasing interest in the work of Comte among German philosophers. It consists of two parts, one expository and one critical. In the expository part a copious and accurate analysis of Comte's sociological opinions is set forth. But it is naturally in the critical part that the main interest centres. Dr. Lietz begins by drawing a parallel, which seems somewhat exaggerated, between Comte and Kant. Then he criticises Comte's philosophy of History, chiefly on the ground that it represents history as a more straight-forward series than it actually is. He contrasts it in this respect with Hegel's appreciation of a dialectic movement in history. Dr. Greef's pamphlet on *Les Lois Sociologiques* seems to indicate a partial recognition, within the Positivist School itself, that Comte's arrangement of the facts of historical development is too rigidly serial. Dr. Lietz brings out also some evidences of one-sidedness in Comte's treatment of history; *e.g.*, in his disparagement of Protestantism in comparison with the Roman Catholic Church, without any due recognition of the element of advance. On the other hand, on Comte's analysis of the social conditions of his own time, Dr. Lietz has nothing but praise to bestow. He thinks that social and political philosophers have still much to learn from Comte's diagnosis of the characteristic maladies of our century. But the *pièce de résistance* in this pamphlet is undoubtedly to be found in the paragraphs that follow, in which Dr. Lietz deals with the relation of Comte's view of society to his general philosophical system. The main point which he seeks to bring out is that Comte is an Idealist

against his will. Even in his treatment of the natural sciences, his strenuous effort to see the world as a whole, his constant endeavour to apply the *esprit d'ensemble*, is taken as an evidence that Comte, in spite of himself, was guided throughout by a supersensuous ideal. Dr. Lietz considers that this idealistic element in Comte comes out still more clearly in his view of Ethics. "Comte," he points out, "was thoroughly anti-utilitarian, and took up the standpoint of the moral *ought*, of unconditioned duty. Now these conceptions are just as little consistent with the premisses of Relativism and Positivism as is the conception of Necessity itself, which also Comte makes use of on almost every page of his Philosophy of History." But it is chiefly in his view of Society that the idealistic side of Comte's philosophy comes into prominence. Having rejected the "entities" God and Nature, he retains, nevertheless, the great entity Humanity. What Dr. Lietz says on this point may be profitably compared with the corresponding passages in Caird's *Social Philosophy and Religion of Comte*, with which Dr. Lietz does not appear to be acquainted. At the same time it is well brought out in this pamphlet (p. 83) that, while Comte is Idealist enough to recognise the unity of the social organism, the fact that he has no ideals beyond Humanity prevents him from taking up a sufficiently critical attitude towards the actual achievements of mankind. He is too much disposed to "chanter les prodiges de l'homme . . . les merveilles de sa sociabilité". In this respect Dr. Lietz contrasts him with Kant and Fichte. These and other points are excellently brought out by Dr. Lietz; and his Dissertation altogether, though necessarily somewhat sketchy, is of great interest and value.

Idee und Perception. Eine erkenntnis-theoretische Untersuchung aus Descartes. Von KASIMIR TWARDOWSKI. Wien: Verlag von Carl Konegen, 1892. Pp. 45.

This pamphlet deserves attention from students of Descartes. The author points out that the words perception and idea are consistently used by Descartes in different senses, perception meaning the subjective act of apprehension, idea the immanent object of this act. He then takes up the question: What meaning have the terms clearness and distinctness respectively, (1) as applied to perception, and (2) as applied to ideas. A clear perception in Cartesian usage meant one in which the object was completely apprehended in all its parts. The same predicate applied to ideas has a different import. A clear idea is one in which is presented the essential attribute which forms the basis and presupposition of the rest. A distinct idea is one which is perfectly separated from all irrelevant matter, so that nothing is presented as part of its content which does not really form part of its content. The distinctness of a perception is constituted by the distinctness of the idea which is its object.

In the Cartesian epistemology clear and distinct ideas do not play the same part as clear and distinct perceptions. Both help to determine the validity of judgments. But a clear and distinct idea is only a condition of the possibility of a valid judgment, whereas the clear and distinct perception is the immediate cause of it. The pamphlet closes with a good collection of relevant passages from Descartes. M. Twardowski's results are perhaps stated without sufficient reserve and circumspection. But he is undoubtedly right in thinking that such work as his is adapted to throw light on the interpretation of the Cartesian theory of knowledge.

Kleine Schriften. Von HERMANN LOTZE. Dritter Band. Leipzig: S. Hirzel, 1891. Pp. lxx., 960.

This third volume, issued in two parts each as large as either of the earlier volumes, completes the collective edition of Lotze's scattered philosophical writings, to which his disciple, Dr. D. Peipers, has been devoting extraordinary care for some years past. The editorial characteristics that distinguished the two earlier volumes (1885-6) are even more strongly marked in the present one. In his anxiety to fix the writings in pure Lotzian form, Dr. Peipers has made elaborate recension of the original MSS. and of the author's corrected proofs whenever obtainable, and he notes, even to the minutest particulars of spelling, punctuation, &c., the changes he has felt bound to make upon the previous impression (in this or that periodical) of the different pieces. Such scrupulosity of restoration he thinks none too great in the case of a writer of Lotze's classical importance. Whether with the restoration there need have been all that detailed specification of it, may be doubted; but none can quarrel with the editorial piety that has provided an index of nearly 400 pages to a collection of writings so varied in character and subject. An index can never be too detailed, if the right man can be found to make it. Dr. Peipers has here done all that one man can to stem the reproach upon German scholarship of launching huge repertories of fact or opinion without clue to their use. The pieces now reproduced run from 1852 to 1880, just before Lotze's unexpected death in 1881. They include reviews of books, mostly from *Gött. gel. Anzeigen*, with the preliminary announcements that he made there of his own works, and also two or three independent essays. The article on "Philosophy in the last Forty Years," contributed in 1880 to *The Contemporary Review*, first as it was to be of a series never there carried further, is, in default of the original, here reproduced in its translated English form.. In all probability, as Dr. Peipers by detailed argument seeks to establish, it was meant to be followed by the paper which, under the title "Die Principien der Ethik," saw the light, after Lotze's death, in a German periodical. This paper (not, by the way, of much importance) is here given in Appendix, because not published by Lotze himself; and is followed by a fragment on Goethe (pp. 542-51) also found among his remains, giving utterance to an old man's altered feeling and judgment with regard to the poetic idol of his youth. There are given, besides, two unpublished pieces from early Leipsic days: one in French (*à la* Leibniz), "Pensées d'un Idiote sur Descartes, Spinoza et Leibniz" (pp. 551-66), apparently written after he had finished his original *Metaphysik* (1841); the other, a fragment "Geographische Phantasien" (pp. 567-75), seeking to explain the secret of men's attachment to their place of birth and early home. It is impossible, with such a varied collection, to do more than give this external indication of contents. But an expression of warm thanks is due for all that Dr. Peipers, and previously Prof. Rehnisch (editor of the *Dictate*), have done to complete the presentation of the life-work of the most remarkable of German philosophic thinkers in the second half of this century.

Geschichte der Philosophie. Von Dr. W. WINDELBAND, Professor an der Universität Strassburg. Vierte Lieferung. Freiburg i. B.: J. C. B. Mohr, 1891. Pp. 385-516.

This is the final instalment of the novel survey of history of philosophy to which Prof. Windelband has been committed since 1890 (see MIND xv. 430, xvi. 295, 550). A novel survey, both because he had already worked over great part of the field (in *Gesch. d. neueren Phil*, 1878-80; *Grundr. d. alten Phil.*, 1888), and because his plan here is to signalise the various questions that in each successive period exercised the philosophic mind and to set out the answers given to them, rather than to deal with the succession of individual thinkers. The present instalment, after com-

pleting the account of the "Philosophy of the *Aufklärung*," is mainly occupied (pp. 417-90) with "German Philosophy". A dozen pages or so are then added, at the end, upon "Nineteenth Century Philosophy," meaning all thought that is not to be connected directly with the Kantian movement held to have run out in (the aged) Schelling and in Schopenhauer. Prof. Windelband is not at his best in these concluding pages. The reason may partly be that he is reserving himself for an extended treatment of the manifold thinking of the present century, to be appended as third volume to his *Gesch. d. n. Phil.*; but if he is there going only to fill in the rough outline now given, some reconsideration of it seems desirable. Though it is true, as he says, that the century shows no other supreme philosophical achievement after Hegel's, it is hardly an adequate representation of its varied strivings to mark but two questions of "Conflict about the Soul" and Nature and History". Nor is this latter question satisfactorily formulated when "historical" consideration is opposed as philosophically rational to "natural-scientific". Prof. Windelband has, of course, a meaning of his own with this opposition, but, when a place has to be found under his "History" for the scientific evolutionism of the period, the antithesis surely loses all point. And it must be added that his notions as to representative thinkers within the century are sometimes rather curious. Thus, as regards this country, one is surprised to find T. Belsham, J. Fearn, G. Combe, S. Baley (*sic*) and H. Martineau put forward, with Brown, the Mills and Bain, for Association-psychology; or to be referred to G. Cogan, with J. Austin and Cornewall Lewis, for Utilitarianism; or under the Scottish school to come upon the names of S. (*sic*) Morell and H. Wedgwood. But to dwell longer on these or other such instances of foreigner's misapprehension would give an altogether wrong impression of the value of Prof. Windelband's present handling. His small-type references throughout the book are, for the most part, as good as they are full; and his exposition, within the lines set himself, is in general masterly. The manner of treatment, by prominent questions, is indeed not always equally effective or even applicable. It is more suitable for extended periods, like the pre-Platonic or the Scholastic, where a large number of more or less like-minded thinkers have to be brought together, than for times dominated by the personality of this or that philosophic hero. Accordingly, it is not always adhered to with uniform strictness. But of the book as a whole, it is safe to say that no other recent compendium shows the same amount of grasp and insight. And a gust of freshness blows all through it. If a really competent translator (who could also make the desirable additions or corrections in the matter of references) would take it in hand, he would do a real service to the English student, still left dependent upon foreign guidance (that has any value) over the historic field of thought.

Einleitung in Die Æsthetik. Von Karl Groos, Privatdocent der Philosophie an der Universität Giessen. Rickersche Buchandlung, 1892. Pp. 409.

The distinguishing feature of this work is the attempt to give a description, if not an elucidation, of the Æsthetic Consciousness from a purely psychological standpoint. The first of the three parts into which it is divided is devoted to the consideration of the nature of the material upon which the æsthetic judgment operates, and the region of Consciousness to which this operation is restricted. In Part II. the *distinctive* character of the object of æsthetic contemplation is determined. These *three* momenta constitute a systematic exposition of the æsthetic doctrine favoured by Dr. Groos, of which the following is a brief summary. The object of the æsthetic consciousness is a construction of the productive

imagination (der ästhetische Schein). In this purely mental image only the internal or intensive relations of its constituent manifold are envisaged, and these are the only relations by which the æsthetic consciousness is engrossed. To a botanist a flower is interesting as belonging to a certain class, to a florist as having a certain market value, but a poet only sees the symmetry and harmony of its colour and contour. Dr. Groos treats in great detail a chief characteristic of the æsthetic cognition, termed by him *die innere Nachahmung*. The æsthetic contemplation of the object in imagination is an activity (*Thätigkeit*), and this activity consists in the internal or mental imitation of the object externally presented. Now, continues Dr. Groos, this process of internal imitation is the very centre and kernel of æsthetic enjoyment. When the eye traces the outline of a form, or the ear follows the magic modulations of a melody, there is always an internal imitation of the external stimulus, and by this act of imitating the æsthetic image is constructed. But again we have to ask, What there is *distinctive* in the act of æsthetic imitation? To this our author replies (p. 94), following Siebeck, every object viewed æsthetically presents itself as personified. Now whence comes this Personification? In dealing with this question Dr. Groos seems to quit the comparatively firm ground of psychological analysis, and ventures on the treacherous quicksands of mystical speculation.

In the Third Part of his treatise Dr. Groos applies the theory previously established to the analysis and explanation of some of the most salient modifications of the æsthetic consciousness: (1) The Beautiful, (2) The Repulsive, (3) The Sublime, (4) The Tragic, (5) The Comic. In discussing these various aspects of æsthetic representation, Dr. Groos touches upon many questions of supreme interest to the student of the fine arts. One of these especially has given rise to much controversy; *viz.*, How far and in what way the repulsive and unpleasant lends itself to independent æsthetic treatment. Dr. Groos defines *das Hässliche* as that which is repulsive to sense in an æsthetic image, (*das sinnlich Unangenehme im ästhetischen Schein*) (p. 283). From this definition it is difficult to see how the deformed and repulsive can ever furnish material for *absolute* æsthetic construction. The soundest doctrine seems to be that the function of the hideous in art is to enhance the effect of the beautiful. Our author will not go to the extreme of maintaining "le beau c'est le laid," but holds that the æsthetic field has been very much widenened since "le vrai le beau, et le bien" have ceased to be identified. For our part we regard the discords of Wagner, the unwholesome situations of Ibsen, and the pure filth of Zola as equally æsthetic paradoxes.

Die Lehre Hegels vom Wesen der Erfahrung und ihre Bedeutung für das Erkennen. Von Dr. GEORGE KENT, Pastor an der Johanneskirche in Christiania. Christiania: Jacob Dybwad, 1891. Pp. 80.

In June, 1881, the Berlin Philosophical Society proposed as a theme for a prize essay: "A Critical and Historical Account of the Dialectic Method of Hegel". Pastor Kent heard of this at so late a date that it was impossible for him to compete. The subject interested him, however, and he accordingly wrote the present essay. He declares, at the outset, that "it is written by a man whose professional work leaves him little time for philosophical production, but by one who is a decided Hegelian". The essay is divided into five sections: (1) Hegel's Theory of Knowledge; (2) Hegel's Notion (*Begriff*) of Experience; (3) Hegel's Teaching concerning the meaning of Experience; (4) Experience and the Hegelian Method; (5) The Significance of Hegel's Philosophy. Of these the first and third form more than three-fourths of the whole. Dr. Kent thinks that the abstract formalism so often charged upon the Hegelian method

receives little warrant from Hegel himself, but is due to the erroneous interpretation of disciples, especially of the Left. This he proposes to prove. The essay is little more than a reiteration of familiar doctrines, though the prominence accorded to the problem of perception is unusual. The *Encyclopädie* is regarded as superior to the *Phänomenologie*—the theory of knowledge stands out more by itself. By collating selected passages an account of Hegel's doctrine of perception is given at some length. This is developed after the orthodox dialectic manner. "The transition from 'perception' to 'experience' takes place when the actuality of the universal is determined." In the course of his discussion Dr. Kent animadverts on the empirical or inductive view as represented by Mill and Jevons. It affords only an abstract account of knowledge. Hegel transcends and includes this in his discovery of difference amid identity of the subject and object. Zeller's middle course between Hegel and the empiricists is condemned as unnecessary; Hegel's position is practically the same, and is much more clearly explained. Dr. Kent admits, nevertheless, that, with the assistance of modern realistic knowledge, Hegelianism might be largely supplemented and readjusted, though without alteration of its fundamental tenets. As a whole, the essay shows considerable familiarity with Hegel's works. Its chief defects lie in a lack of expository power, and in a want of appreciation of more recent results of psychology.

Received also:—

W. James, *Text Book of Psychology.* London: Macmillan & Co. 1892. Pp. xiii., 478.

J. Royce, *The Spirit of Modern Philosophy.* Boston & New York. Houghton Mifflin & Co. 1892. Pp. xv., 519.

Karl Pearson, *The Grammar of Science.* London: Walter Scott. 1892. Pp. xvi., 493.

C. Secrétan, *La Civilisation et la Croyance.* 2e édition. Paris: F. Alcan. 1892. Pp. 396.

E. de Roberty, *Agnosticisme.* Paris: F. Alcan. 1892. Pp. 164.

Ch. Renouvier, *Principes de la Nature.* 2e édition. Paris: F. Alcan. 1892. 2 Vol. Pp. 299, 407.

G. Rodier, *La Physique de Straton de Lampsaque.* Paris: F. Alcan. 1891. Pp. 133.

J. Jaurès, *De la Réalité du Monde sensible.* Paris: F. Alcan. 1891. Pp. 370.

L. Arréat, *Psychologie du Peintre.* Paris: F. Alcan. 1892. Pp. 264.

H. Schwarz, *Das Wahrnehmungsproblem.* Leipzig: Duncker & Humblot. 1892. Pp. 408.

R. Avenarius, *Der menschliche Weltbegriff.* Leipzig: Reisland. 1892. Pp. 95.

F. Raab, *Wesen und Systematik der Schlussformen.* Wien: C. Konegen. 1891. Pp. 52.

E. G. Husserl, *Philosophie der Arithmetik.* Bd. 1. Halle: C. E. M. Pfeffer (R. Stricker). 1891. Pp. 324.

E. Dillmann, *Eine neue Darstellung der Leibnizischen Monadenlehre.* Leipzig: Reisland. Pp. x., 525.

Avv. Enrico Piccione, *Le leggi biologiche et le leggi giuridiche in rapporto alla questione sociale.* Roma: Forzani. 1892. Pp. 108.

N. R. D'Alfonso, *Lezioni elementari di psicologia normale.* Milano—Roma: E. Trevisini. 1891. Pp. 148.

VIII.—PHILOSOPHICAL PERIODICALS.

The Philosophical Review.—Vol. i., No. 1. Prof. J. Watson—*The Critical Philosophy and Idealism.* [Expounds and enforces the system of idealism educed from Kant by Caird under the guidance of Hegel. This article is marked by the lucidity and acumen characteristic of its author.] Prof. G. T. Ladd — Psychology as so-called "Natural Science". [It is pointed out that the real value of Prof. James' great work lies in its purely psychological matter, not in "various exceedingly thin and dubious diagrammatic representations of brain-processes occasionally interjected into the discussion of psychological phenomena". Prof. Ladd's criticism seems to us to be just and effective.] Benj. Ives Gilman—On some Psychological Aspects of Chinese Musical System. [A careful account of Chinese music, "based upon observations of performances by native musicians".] Reviews of books, including a Notice of Spencer's *Justice* by the Editor. Summaries of Articles.

American Journal of Psychology.—Vol. iv., No. 2.—Prof. Jastrow contributes a very interesting series of "Studies from the laboratory of experimental psychology of the University of Wisconsin". What he calls "a novel optical illusion" is worth attention. It was found that if before a rotating disc composed of a large sector of one colour and a small sector of another, the two differing considerably in shade, a rod, held horizontally, be passed up and down, the whole disc seems broken up by horizontal parallel bands of a colour similar to that present in greater proportion. If the disc be composed of three or more colours the bands appear composed of several colours, and this holds even when there is a perfect fusion of the segmental colours with the disc rotating at a high rate of speed. By changing the conditions of the experiment it was found that the bands originated probably "during the vision of the minority colour," and Prof. Jastrow puts them down as due to the persistence of after images. Dr. E. C. Sanford continues his admirable "Laboratory Course in Physiological Psychology," treating in this number of taste, smell, and hearing. The further observations on the brain of Laura Bridgman are described at some length by Prof. Donaldson, who also, in connexion with J. L. Bolton, contributes a paper on the size of the cranial nerves in man.

In the International Journal of Ethics (Jan., 1892) Brother Azarias writes on 'The Ethical aspects of the Papal Encyclical,' and the Rev. J. Macbride Sterrett gives a well written account of the 'Ethics of Hegel'. Mr. J. S. Mackenzie prints the first part of a lecture on "The Three Religions": perhaps a more significant title would have been "Religion and Two Half-religions," since his main point is that "while the Agnostic Religion is nothing else than worship of the unknown, and the Religion of humanity is in its essence nothing else than the worship of the moral power in man," true religion—and popular Christianity is its essence—is the faith that there is no real separation of power from goodness. Mrs. Hertz contributes an enthusiastic review of Frau von Suttner's novel, "Die Waffen nieder!" (1891), which is described as "the most forcible protest ever uttered against the stupendous evils, the egregious madness, of war"—all the more remarkable as written by a German. Professor H. Nettleship writes judiciously, but without remarkable originality, on "Authority in the sphere of conduct and intellect". In the "Discussions" Mr. James Seth urges familiar arguments in favour of the retributive theory of punishment, in reply to the papers by Mr. Rashdall and Dr. Tönnies; but as he takes the latter's paper as "representative of the de-

mand for the substitution of the 'deterrent' and 'reformative' theories," he can hardly be supposed to have read it; since it was a main aim of Dr. Tönnies to bring home to his readers the failure of actual legal punishments either to deter or to reform, and the necessity of admitting and acting on this failure.

In the PROCEEDINGS OF THE SOCIETY FOR PHYSICAL RESEARCH (Part XX.) the most important article is one on "The Subliminal Consciousness," by Mr. F. W. H. Myers, in which a comprehensive hypothesis is offered to explain the recognised phenomena of automatic writing, alternations of personality, and the hypnotic trance, as well as the more disputed telepathy. Hypnotic experiments have familiarised the world with the fact that gaps in a man's ordinary chain of memory, such as sleep and trance, may be filled by psychical activities having a secondary chain of memory of their own, which is in a sense more comprehensive than the primary;—since the fully hypnotised subject as a rule remembers waking life in the hypnotic trance, but not *vice versâ*. It is further established that the consciousness or cerebration belonging to the hypnotic state can exercise over the nervous, vasomotor and circulatory systems a degree of control unparalleled in waking life; of which Mr. Myers gives some striking instances, recorded by careful experimenters. To explain these and cognate facts, Mr. Myers supposes that beyond the habitual consciousness of any individual there exists a range of conscious action of unknown extent "forming some part of his total individuality," and "included in an actual or potential memory below the threshold of his habitual consciousness". This "subliminal consciousness" may be supposed to include the psychical counterparts of organic processes beyond the control of ordinary volition; and Mr. Myers would also refer to it telepathic impressions, which he supposes to be received by "aid of adits and operations peculiar to the subliminal self". Such "subliminal" psychical activity influences the ordinary or "supraliminal" in various ways and degrees; sometimes injuriously, as when its disorders are manifested in hysteria and self-suggested maladies; sometimes beneficially, as when the hypnotic trance is therapeutically used.

REVUE PHILOSOPHIQUE.—16e année, No. 12. L. Dauriac—Un problème d'acoustique psychologique. [An interesting exposition and criticism of Stumpf's theory of simultaneous fusion. This theory is said to be based on two postulates: (1) That attention, adding nothing to the content of consciousness, merely discriminates its constituent parts. (2) That the range of psychical reality is wider than the field accessible to introspection. These assumptions are contested by M. Dauriac.] M. Fouillée—Les origines de notre structure intellectuelle et cérébrale. II. L'évolutionnisme. ["The forms of our thought are nothing but the essential functions of our primitive and normal volition, to which correspond the essential functions of our physiological life." The principles of identity and sufficient reason are treated from this point of view in an interesting and—so far as concerns Psychology—in a convincing manner.] G. Séailles—Léonard de Vinci artiste et savant. [An interesting study of the harmonious fusion of artistic and scientific genius.] J. Passy—Sur les dessins d'enfants. [A record of observations possessing both educational and psychological value.] A. Binet—Sur un cas d'inhibition psychique. [We fail to catch the true expression of a feature when it is out of keeping with that of the rest of the face. Figures are given in illustration.] Analyses et comptes rendus, etc.

17e année, No. 1. C. H. Dunan—Le problème de la vie. [Organisation must be regarded as belonging to the world as a whole, not merely to particular organisms. Universal organisation cannot be explained as

a product either of mechanical or of final causes, or of both combined.] B. Perez—La maladie du pessimisme. J. M. Guardia—Philosophes espagnols de Cuba: F. Varela, J. de la Luz. [An interesting article.] G. Mouret.—Le problème d'Achille. Analyses et Comptes rends, etc.

17e année, No. 2. A. Binet—Les mouvements de manège chez les insectes. [The rotatory movements produced in insects by lesion of their ganglia are involuntary. They are primarily due to the legs on one side being more strongly innervated than those on the other, and secondarily to the physiological associations through which all the legs co-operate in executing the movement, when it is once begun.] Ch. Dunan—Le problème de la vie. [The unity of universal organisation is simple and indivisible like that of universal space and time. The only admissible conception of it is that of a metaphsical (*i.e.* hyperphysical) reality, one in its essence, but evolving itself in time and space under the form of an endless multiplicity of movements. Its real unity is the ground of the formal unity of time and space, and of their connexion with each other.] J. M. Guardia—Philosophes espagnols de Cuba (fin.). Belot—Justice et socialisme, d'après les publications récentes. [Includes a criticism of Spencer's *Justice*.] Notices bibliographiques, etc.

Zeitschrift f. Psychologie u. Physiologie d. Sinnesorgane. Bd. iii., Heft 1. H. v. Helmholtz—Versuch, das psychophysische Gesetz auf die Farbenunterschiede trichromatischer Augen anzuwenden. [A continuation of the article "Versuch einer erweiterten Anwendung des Fechnerschen Gesetzes im Farbensystem" in Bd. ii. of the Zeitschrift. The most important points are: (1) The new determination of the three ground-colours as carmine-red, ultramarine-blue, and yellowish green (green of vegetation). The red end of the spectrum is, therefore, no longer the starting-point for the Young-Helmholtz theory of colour-vision. (2) The referring of the perception of colour-differences to a more original perception of differences of brightness (*Helligkeit*).] R. Greeff—Untersuchungen über binokulares Sehen mit Anwendung des Heringschen Fallversuchs. The judgment of distance may depend essentially upon the perspective retinal images of binocular vision (Wheatstone, Hering), or upon the muscular movements of the eye (Brücke). In Hering's *Fallversuch*, the reagent judges whether a ball falls on the near or far side of the fixation-point, under conditions which are meant to exclude the possibility of such movements. Dr. Greeff improved the apparatus, to meet the objections of Donders; and obtained the following results. (1) The perception of distance is the same when the visual axes are converged, parallel or divergent: in the latter case, provided that the double images are still to be combined. (Noteworthy for the psychology of sensation is the correction of sensation by theoretical reflexion, p. 33.) Monocular results were correct in 50 p. c. of the experiments; as probability would lead one to expect, on Hering's theory. (2) The *Fallversuch* gives valid results for greater distances, where convergence and accommodation do not come into consideration, provided that the balls are clearly to be seen, and that the distance between the balls which fall before and behind the fixation-point is large enough in relation to the remoteness of this point from the eye of the observer. This relation is definite. Dr. Greeff also experimented upon binocular vision with monocular reduction of clearness of sight; and upon binocular vision in cases of squinting.] A. Pick—Bemerkungen zu dem Aufsatze von Dr. Sommer, "Zur Psychologie der Sprache". [In Bd. ii. Dr. Sommer described a patient who was unable to give the name of objects presented to him, till he had written them down. It was proved that the objects did not call up the ideas of their names either

as heard or seen ; but simply the movements necessary for the writing of the names. Dr. Sommer asks: What is the connexion between sight of an object in this case and the graphic movements? And are there known physiological or pathological cases in which memory-ideas can be called up by movements, and in which amnesia results, if the movements are prevented? Prof. Pick in answer calls attention to the researches of Charcot, Binet and Ballet. It is certain (1) that for many normal persons the memory-ideas of words consist of ideas of the movements necessary for writing them down ; (2) that in certain pathological cases words must be written before they can be pronounced ; and (3) that in all cases where the original constituents of the word-ideas have been lost by disease a *suppléance fonctionelle* occurs: other constituents take their place in consciousness,—graphic the place of auditory, *e.g.* This was the state of Dr. Sommer's patient. As regards the first question, Prof. Pick concludes that ideas of graphic movements formed the connecting-link between the sight of the objects and the movements themselves.]

Archiv für Geschichte der Philosophie.—Bd. v., Heft 2. E. Zeller —Plato's Mittheilungen über frühere u. gleichzeitige Philosophen. [A consideration of the different ways in which Plato, by the dramatic form of his dialogues, is led to take account of his philosophical precursors and contemporaries. Most of the author's points had previously been made in the course of his *History*, but the subject is one that lends itself with advantage to the present mode of special treatment. Chief interest attaches, perhaps, to the Protagorean references, here set out at some length. Noteworthy also is the attempt to connect Antisthenes with more than one of the positions successively stated and refuted in the *Theætetus;* but how conjectural such attempt is, appears on comparison with the very different, yet not less confident, surmises of Dr. H. Jackson. The only point not doubtful—and this is well brought out by the venerable historian at the close of his article—is the wealth of allusion to contemporaries which lies locked up in Plato's artful exposition. A. Döring—Der Begriff der Dialektik in den Memorabilien. [Shows that the Xenophontic Socrates understands διαλέγειν, now in a stricter sense of conceptual determination, and now in a wider sense of general argumentation.] A. Gercke—Ariston. [A careful discrimination, in respect of their writings and relations to other thinkers, between the Peripatetic Ariston of Ceos and the Stoic Ariston of Chios, who from the first were more or less confounded by the ancient authorities.] P. Tannery—Deux nouvelles lettres inédites de Descartes à Mersenne. [One of them very forcibly confirms what was known already of Descartes' disgust, in 1646, with the *Fundamenta Physices* of his whilom ardent admirer Regius.] Jahresberichte.

Vierteljahrschrift für wissenschaftliche Philosophie. Bd. xvi., Heft 1. A. Riehl—Beiträge zur Logik, I. [Discusses the nature of concepts and of judgment. The logical predicate is always either actuality (*i.e.*, reality for sense) or objectivity (*i.e.*, reality consisting in a necessity imposed on thought by its objects). This distinction is made the basis of a division of judgments into two classes. Riehl thinks that his view of judgment has most affinity with that of Bradley, although he inverts B.'s use of the terms, subject and predicate.] Ad. Nitsche—Die Dimensionen der Wahrscheinlicheit und die Evidenz der Ungewissheit. F. Rosenberger—Ueber die fortschreitende Entwicklung des Menschengeschlechts. (Schluss.) B. Seligkowitz—Ernst Platner's wissenschaftliche Stellung zu Kant. I. A. Marty—Ueber Sprach reflex, Nativismus und absichtliche Sprachbildung.

Some Notices have been unavoidably crowded out.

IX.—NOTES.

CONTRIBUTION TO THE PSYCHOLOGY OF VISUAL DREAMS.

While investigating the general subject of dream-life I have become particularly interested in the influence of the *Eigenlicht* of the retina upon visual dreams. Observations to establish this influence are, of course, not new; and some writers have perhaps been disposed to set upon it a sufficiently high estimate. More or less extended and fruitful remarks are, therefore, to be found in the works of Johannes Müller (*Phantastische Gesichtserscheinungen*, 1826), Gruithuisen (*Anthropologie*, 1810, und *Beiträge zur Physiognosie und Heautognosie*, 1812), Purkinjé (*Beobachtungen und Versuche zur Physiologie der Sinne*, 1823-26), Maury (*Le Sommeil et les Rêves*, 1878), Radestock (*Schlaf und Traum*, 1879), Wundt (*Grundzüge der Physiologie*), and others. In particular have Von Graefe and Siebeck remarked upon the effects of diseased and over-excited conditions of the eye, of "phosphenes," &c., in inducing visual phantasms.

Of all these writers the observations of Müller and Maury, conducted upon themselves, most resemble my own. It will serve my present purpose, then, to refer to these authors with somewhat more detail. Müller (p. 20 f.) declares that he rarely fails to see, before falling asleep, "with closed eyes and in the darkness of the field of vision," a great variety of highly illumined and coloured images. From his earliest youth he remembers having noticed these phenomena, and always well knew how to distinguish them and their rapidly changing forms and movements from the peculiar images of dream-life. They rarely take the shape of recognisable realities, but customarily form fantastic figures of men, animals, and what not, such as he never saw before. "I often follow these appearances," says he, "for a half-hour, until they finally pass over into the dream-images of sleep."

In another place (p. 49) Müller declares that certain dream-images *are* "nothing else than the luminous phantasms which appear in the visual substance, before going to sleep, when our eyes are closed". The origin of these phantasms he refers to intra-organic stimulation, especially in connexion with changes in the blood-supply of the organ.

Maury treats of his experiences of this sort under the head of "hallucinations hypnagogiques". He affirms (p. 79) that he has "often established the passing-over of a luminous image, due apparently to the excitement of the optic nerve, into a clearly defined figure whose formation it was possible to follow". It would seem, then, that the confidence of both Müller and Maury in the theory that "the stuff" of certain dreams or the material made into many of their visual dream-images, originates in the scheme marked out in the "retinal phantasms" by chance variations in the blood-supply, was chiefly based upon their ability to follow the retinal phantasms up to, or into, the visual hallucinations of dream-life. Now my method of experimenting with myself has been the exact opposite of this. It has, I believe, enabled me to establish several interesting points of importance not only for the entire theory of visual dreams but also for a better understanding of waking states of perception and of the psycho-physical mechanism employed in the production of such states. Some of these points will be given here, as established to my satisfaction *in my own case*. Further evidence and criticism are invited before confidence can be established in their validity in all cases.

But, first of all, let me briefly describe the method of my very simple experiments. To appreciate them it must be remarked that the retinas of my eyes are probably somewhat unusually sensitive to excitement from intra-organic and cerebral stimulation. I have found by inquiry that a large proportion of persons unaccustomed to observe themselves for purposes of scientific discovery are entirely unacquainted with the phenomena of retinal *Eigenlicht*. Ask them what they customarily see when their eyes are closed in a dark room and they will reply that they see nothing. Ask them to observe more carefully and describe what they see, and they will probably speak of a black mass or wall before their eyes, with a great multitude of yellow spots dancing about on its surface. Some few will finally come to a recognition of the experience with which I have long been familiar in my own case. By far the purest, most brilliant, and most beautiful colours I have ever seen, and the most astonishing artistic combinations of such colours, have appeared with closed eyes in a dark room. I have never been subject to waking visual hallucinations, but I verily believe there is no shape known to me by perception or by fancy, whether of things on the earth or above the earth or in the waters, that has not been schematically represented by the changing retinal images under the influence of intra-organic stimulation. And as Müller, Maury and others have noticed, any form of unusual cerebral excitement is conducive to very lively activity among the retinal phantasms.

Equipped, then, with the instrument of such a psycho-physical mechanism for the production of visual images, I have been accustomed to experiment in the following way. I "set" this mechanism so that it will dip down into sleep and dream-life, with a gradual curvature, as it were, and then come out of dream-life in an instant; i.e., by a steep curve. When I wake in this way, I am ready to do two things pretty nearly simultaneously—namely, to retain in mind the visual images of the dream from which I am awaking, and also without opening my eyes (which would, of course, spoil the experiment) to note in terms of objective waking consciousness the schematic phantasms which are fading from the retina. Thus a comparison between the phantasm, as objectively observed and localised in the retinal field, and the visual images of the dream, as detained and remembered for a brief time, becomes possible. To set the psycho-physical mechanism of sleep so that it shall run down, and I awake within from two to five minutes after falling asleep is much easier for me than to set it so as to wake at any given hour in the early morning. Indeed, the latter I find it difficult or impossible to do with much approach to accuracy. I am therefore inclined to think that with a little effort and practice many will find themselves able to perform upon themselves my simple experiments.

It will be observed that the method I have employed, when it is successful, actually catches the retinal schemata as they are vanishing from the retinal field, and then compares them with the visual dream-images which they have already produced. The method employed by Maury watches these schemata as they are engaged in the process of producing visual dream-images. I arrest the impish phantasms before they can can get off the stage of my dream. I see clearly what they have been doing. Maury arrests them rather while they are coming upon this stage, and endeavours to catch them in the act of beginning their dramatic transformations. It seems to me that my method is perferable; especially since, when it succeeds, it conducts the crucial part of the experiment under the eye of a clear objective waking consciousness.

By this method of experiment, then, I have established as good in my own case, the following conclusions.

1. The visual "stuff" of those dreams which occur soon after falling asleep is largely, if not wholly, due to excitement of the retina by intra-organic stimulation. These dreams, as respects their origin, are thus distinguished from those which occur under ordinary circumstances in the morning hours. The latter are oftener due to external stimulation—i.e., to the rays of light penetrating to the retina through the closed eyelids. But inasmuch as the sleep of many persons during several hours of the night is a succession of naps interrupted by more or less partial awakening, both the retina and the visual centres of the brain may prove sources of origin for visual dreams. Those visual dreams however, which follow almost immediately on going to sleep in a dark room originate, wholly or chiefly, in the *Eigenlicht* of the retina. The vital action of the retina (and hence the variety and rapid movement and wonderful transformation of the retinal schemata) diminishes rapidly with the duration of sleep. The dreams into which the retinal phantasms have woven themselves are forgotten beyond recovery before the morning hours. Hence the visual dream-images which are remembered on awaking, will be more likely to be derived from external stimulation.

At the same time it must be remembered that, while the threshold of consciousness rises rapidly, as respects susceptibility to external stimuli, during the first hour or two of sleep, the *relative* sensitiveness of the soul to all intra-organic changes is greatly increased, This fact gives an enormous influence to the more feeble and slow activities of the retina, even some time after sleep has begun. And, as has already been indicated, partial or complete awaking, if caused or followed by increased cerebral excitement, will have a tendency to renew the sensitiveness and more active condition of the retinal field.

2. Probably few or none, of the visual images of our dream-life are deprived of all accompaniment and support from an excited retina. But since the ordinary conditions of normal sleep are such as both to diminish the intensity of the surrounding light and also to lower the sensitiveness of the organ of vision to the action of light, the relative importance of intra-organic excitement of the retina for all visual dreaming, becomes at once apparent. There is probably little such dreaming that is wholly independent of the arrangements which light and dark spots, dots, lines, etc., in the retinal field, assume under the changing vital conditions of this part of the visual organism. Almost without exception, when I am able to recall the visual images of my dream and to observe the character of the retinal field quickly enough to compare the two, the schemata of the luminous and coloured retinal phantasms afford the undoubted clue to the origin of the things just seen in my dream-life. This is emphatically true whenever the imagery of the dream is purely imaginative rather than accompanied by memory and recognition.

It seems to me impossible, then, to make a hard and fast distinction between visual perception and visual imagination in dream-life so far as the origin of their sense-elements is concerned. The end-organ of vision is actively engaged in furnishing certain elements of the visual images, from whichever point of view their combination is to be regarded. In saying this, however, I by no means intend to depreciate the part played in the drama by the psycho-physical activity of the central organs. It is to occult processes which go on within the cerebrum that we must look for the physiological antecedents of the

elaborated, associated, meaningful and memorable character of the visual shapes of our dreams. The data of sense to be discovered in the retinal field, when considered with a cool, scientific, and objective consciousness, are thin, pale and almost senseless schemata. They are like the few strokes and dots which my friend, the "chalk-talk" artist, dashes upon the black-board with his white and coloured crayons. The draughtsman puts these data upon the black-board ; the retinal activity copies their outlines ; but it is only on the basis of complicated psycho-physical activities lying further back and above in the brain that we *see the things* which we are invited to see.

What I am inclined to believe, however, is this—that, in dreams as well in all waking perception we neither see nor imagine aught without participation of the retinal changes in the complex psycho-physical process. And if this is so, we are enabled to understand how visual images in dreams may furnish all the necessary elements of that objectivity which things seen in dreams certainly possess.

3. The most elaborate visual dreams may originate in intra-organic retinal excitement. Perhaps a harder problem could not be given to my experiments to solve than the following : How can one be made by such excitement to see a printed page of words clearly spread out before one in a dream ? How can so orderly a visual phenomenon owe its origin to chance arrangements of the "retinal dust" ? But I have several times verily caught my dreaming automaton in the feat of having just performed this transformation. On waking from a dream, in which I had distinctly seen lines of printed letters forming words and sentences and had been engaged in reading these lines by sight, I have clearly detected the character of that retinal field which had originated such an extraordinary hallucination. The minute light and dark spots which the activity of the rods and cones occasions, had arranged themselves in parallel lines extending across the retinal field. In other words, the clearly printed page which I was reading in my dream faded away into an object that appeared to my waking consciousness like a section of an actual page of print when seen through an oval hole in a piece of paper at too great a distance to distinguish more than an occasional fragment of a word, and even that dimly.

If the superior psycho-physical mechanism of vision can in dream-life seize upon what is really nothing but rows of meaningless blackish spots upon the retina and can convert them into imagined pages of print which may be read with great satisfaction off-hand in a dream, what is it not capable of achieving ? That it can cut all manner of capers in hermeneutics I know by abundant experience. And the variety of material in the shape of dots, dashes, splashes, lines and angles which are furnished by the retinal *Eigenlicht* is infinite. Some one has declared that the secret of the painter's art is to represent everything with two strokes and a dot. Whether this be so, or not, in the finished product of art, when it is to be brought under the eye of the wide-awake critic, this is indeed the secret of the retina's art in sleep. Brain and mind are no critics of such arts when they, too, are asleep. All manner of inanimate things, of animals, plants, and human beings, seen in dreams, may resolve themselves into the fantastic schemata of the retinal field, if we can only manage to surprise these schemata with an observing critical consciousness.

The data afforded by "retinal dust" may, of course, unite with other data of sense and products of imagination in the dramatic representations of dream-life. To illustrate this I will briefly recite a dream of mine which doubtless originated in a combination of visual phantasms

of the retina with entotic sounds. The dream ended in too much astonishment, however, to make it possible for me actually to observe the retinal field on waking.

I was standing in a gloomy grove, regarding fixedly a small black object lying on the ground, of about the size and shape of a garden slug. Suddenly the thing began to swell with astounding rapidity. Almost before I could get out of its way, it had grown to the dimensions of a large hogshead; and it had also begun to move with a speed out of all proportion to its enormous size. From place to place the huge black thing, or animal (?), darted in the grove; and each time it struck one of the trees of the grove the unfortunate object of its attack vanished in smoke. Finally the monster itself exploded into countless fragments, and I awoke. Doubtless some enlarging and moving dark blotch on the retinal field had run its customary course—parallel, however, to the rhythmic occurrence of certain entotic noises.

4. The retinal phantasms, like all the other data derived by excitement of the end-organs of sense, are, within certain limits, under the influence of fixed attention and volition. It is well known that some persons can create for themselves hallucinations of the sense of sight which have all the objectivity of things when seen with waking consciousness and under the clear light of day. As I have elsewhere said: "In the case of perception with a moving eye, we can, to a certain extent, decide the area over which the point of regard shall sweep and the relative attention to be given to the subdivisions of this area. Furthermore, and especially in the case of geometrical figures, it often lies in our power to decide how we will interpret certain data which admit of more than one interpretation."

What is true of vision when it originates in external stimulation of the retinal area is true likewise of vision which originates in intra-organic stimulation of the same area. Within certain limits—rather narrow, to be sure—we can see what we look for and wish to see, and we can choose our interpretation of what we see by the *Eigenlicht* of the retina as well as by the sunlight. Very frequently I have only to choose some simple schema such as would serve as a frame-work for a corresponding object, *fixate* it in idea with closed eyes and *will* steadily to have it appear, and in due time it will more or less completely construct itself in the retinal field. Nor do I believe that in such cases the influence of ideation and volition—or, speaking physiologically, of the cerebral centres—upon the intra-organic activity of the retina is altogether merely selective; it appears also to be determinative. Idea and volition, with their correlated psycho-physical cerebral processes, can (to a certain extent) determine the condition of the retinal field. How we are to understand the physiology of this influence from the ideational and voluntary centres of the brain upon the end-organ of sense I do not know. Of the fact of such influence I am confident.

But in sleep the mechanism of the cerebral centres is the principle seat of those changes which distinguish dream-consciousness from waking consciousness. In this truth, then, we have another reason for the strange, irrational, rapidly shifting and intermingling way, in which the visual images of our dreams are constituted and interpreted. On the one hand the data of sense furnished by the end-organ of vision are changeful and capricious. They are not like the steady stimulations of the orderly arrangements of light-rays reflected from a real object. On the other hand the superior psycho-physical mechanism which combines, elaborates and interprets these data is, for the time being, partially freed from the laws which control its action in waking consciousness.

5. Finally, I have always noticed a marked change in the character of the muscular adjustment and movement of the eye on passing from dream consciousness to waking consciousness. Indeed, one chief factor in converting the passive spectator and unconscious author of the visual dream-images into the active and critical investigator of the retinal schemata is just this muscular change. I have had great difficulty in determining precisely in what the change consists. But of the existence and distinct—nay, decisive—influence of such a change, I am perfectly sure.

I am inclined to think that on closing the eyes for sleep the eyeballs are, as has been customarily supposed, turned upward and inward. This position is probably most favourable to the disappearance from consciousness of all disturbing visual images. Perhaps in deep and dreamless sleep (and for purposes of my present inquiry "dreamless" sleep means sleep in which no images of things seen rise above the threshold of consciousness) this position of the eyeballs is maintained unchanged. But I am inclined also to believe that, in somewhat vivid visual dreams, the eyeballs move gently in their sockets, taking various positions induced by the retinal phantasms as they control the dreams. As we look down the street of a strange city, for example, in a dream we probably focus our eyes somewhat as we should do in making the same observation when awake, though with a complete lack of that determined teleological fixedness which waking life carries with it.

But what change in muscular adjustment of the eye takes place when I come out of the dream consciousness and promptly betake myself to the psychologist's task of studying the fantastic shapes that are fading from my retina? Then I focus both eyes for a point of regard as close as possible in front of the eyes, and in the direction which the phantasms occupy in the retinal field; and I steadily fixate them there with that rigidity of muscular control which belongs to waking attention. *It is the marked change in the muscular sensations and in the feeling of fixated attention which characterises my waking perceptive consciousness.* This change is necessary to the recognition of the schemata in the retinal field as the components of those fanciful beings with which my "mind's eye" has held commerce in the dream.

Such are some of the conclusions to which I have been led by my experimental studies of this very interesting class of phenomena. Need I add that to me they seem to verify the general theory of perception which I have elsewhere advocated. This theory regards all seeing as resulting from a psychical synthesis interpreting data of sense, and denies the possibility of drawing any fixed line between illusions and hallucinations, between what we call imagination and what we call perception of sense.

GEORGE TRUMBULL LADD.

ARISTOTELIAN SOCIETY.—The following papers have been read before the Society:—On 14th December, "A Criticism of Evolutionary Ethics" by Mr. J. H. Muirhead. On 11th January, "The Permanent Meaning of the Argument from Design" by Mr. B. Bosanquet. On 25th January, "The Philosophical Pons" by Mr. S. H. Hodgson, President. On 8th February, "The Meaning of Life" by the Rev. Dr. W. L. Gildea. On 22nd February, "Theories of Pleasure" by Mr. G. E. Underhill. A meeting was held at Cambridge on 7th March, when in a symposium the question, "Is the distinction between 'Is' and 'Ought' ultimate and irreducible?" was discussed by Prof. H. Sidgwick, Mr. J. H. Muirhead, Mr. G. F. Stout, and Mr. S. Alexander. Mr. L. T. Hobhouse, M.A., and Mr. J. C. Bowen have been elected members. The Proceedings of the Society, Vol. 2, No. 1, has just been issued.

New Series. No. 3.] [July, 1892.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

I.—LOTZE'S ANTITHESIS BETWEEN THOUGHT AND THINGS. I.

By A. Eastwood.

It is easier to quote Lotze than to criticise him. His philosophy is composed of so many heterogeneous ingredients and has so many side issues at stake, that it presents the appearance of administering to every recognised cult in turn, from teleological Idealism to scientific Materialism, about equal shares of favour and abuse. Were a collection made of isolated passages which one theory or another might adduce in its support, it would appear that Lotze's writings were a hopeless sea of contradictions. But it would be obviously unfair to form an estimate of Lotze's worth in this piecemeal fashion. His admirers have naturally preferred to dwell on the consistency of his general line of thought and to exhibit the attractiveness of the ultimate aims and aspirations which undoubtedly exercise a dominating influence over all the details of his speculations. There is yet a third method of treatment, to which Lotze has been subjected by those of his enemies who regard themselves as staunch Idealists of the "absolute" type; they have simply ignored him. With feelings of impatience and irritation they have dismissed him from their minds as a terrible example of the ways in which philosophy can be misunder-

stood. Even Lotze's lifelong efforts to officiate as the peacemaker between philosophies they regard with contempt, under the impression that his achievements in this vocation are rather of the literary and forensic kind, which blows hot and cold with the same breath, than possessed of any healing virtue to permanently close the ruptures between opposing schools. In fact they do not want peace but war, and hope to find in their own Hegelian theory a signal example of the survival of the fittest.

But neither by picking holes in a man nor by praising him can we form an unbiased judgment of his worth. And Lotze is too important to be ignored. It may be fairly claimed that, in pure philosophy, he is the last in the field; he has pronounced his verdict upon all the most important problems of speculation; and so wide is the respect he commands that, as long as his words are allowed to remain the last, they will continue to gain acceptance as final. His attitude towards other German thinkers is most precisely described by von Hartmann in his *Lotze's Philosophie*. In that book he shows that it was Lotze's object, by a reconstruction of Herbart, to arrive at a higher point of view from which the elements of truth in Hegel and in Herbart might be blended into one harmonious whole, always provided that this point of view should be consistent with the spirit of Weisse. If students of Lotze would take up this hint of von Hartmann's and bear well in mind the influence of Weisse, they would possibly understand better what Idealism, with Lotze, really means. But in England, at any rate, the niceties of Lotze's position relative to the immediate philosophical atmosphere with which he was surrounded do not excite much concern; attention is confined to the broad and permanent outlines of his thought, which mark the culminating point of the reaction, led by Idealists with a partiality for "common-sense" and science, against extreme Hegelianism. Most of our recent metaphysicians bear strong marks of his influence, and he is also gaining in favour and importance among that class of religious speculators who view with apprehension the latest and boldest interpretations of Hegel. For ultra-Hegelianism is bound, in the first instance, to assume a negative attitude towards many of the cherished convictions of religious minds; and, until it convinces people that it can provide a positive philosophy of religion which shall be adequate to religious needs —a task in which it has not succeeded as yet—there are strong temptations for sober-minded men to throw in their lot with Lotze, the able champion of Christianity who can

do battle with Hegel and Herbart on their own grounds, and yet contrive at the end of the day to bring in victorious the more characteristic tenets of orthodoxy. If, therefore, Hegelians wish to check these desertions from their camp, they ought to take action; if they do not wish their silence to be misunderstood, they ought to clear away those misunderstandings of philosophy to which they think Lotze gives rise.

The final goal to which Lotze's thoughts are always directed is well known and much admired, and the many grounds on which its attainment is desirable are set forth with great persuasiveness and plausibility in the *Microcosmus*. But I think it is the first duty of criticism to examine the methods by which this consummation is to be reached and demonstrated as true; and for this purpose his later works on Logic and Metaphysic are the most important. One of the dominating notions, or at least the pervading perplexity, which is especially prominent herein is the belief in a relation or antithesis (or both) between thought and things. It is to be noted however that the importance, and at the same time the difficulty, of this antithesis lies in the fact that it is impossible to lay our finger on any particular chapter of Lotze's (as could be done, *e.g.*, with regard to his views on space) and say "here is his theory on the subject"; he does not make it a special problem; it is rather a vein of thought, permeating the entire body of his metaphysical theories, and, to a large extent, supplying the principle on which their vitality depends. Accordingly, although his Theory of Knowledge in *Logic*, bk. iii., is the *locus classicus* on the matter, in order to appreciate its import and seek its full justification we must often go further afield.

If we would fix upon the starting-point from which the antithesis developed in Lotze's mind, I think we must find it in his steady conviction that philosophy is, in the last resort, tentative, and is debarred by the frailty of human knowledge from the possibility of arriving at absolute certainty.

> I readily admit that I take philosophy to be throughout merely an inner movement of the human spirit. In the history of that spirit alone has philosophy its history. It is an effort, within the presupposed limits, even to ourselves absolutely unknown, which our earthly existence imposes on us, to gain a consistent view of the world. . . . An absolute truth, such as the archangels in heaven would have to accept, is not its object.

This passage (*Met.*, bk. i. ch. vii.), which is typical of many, throws a strong light on the characteristic bent of

Lotze's mind. It betrays at once his recognition of the finite and human aspect of knowledge and also his firm conviction that this is not the whole of the matter, that there is a sense in which knowledge and reality must be held to be infinite and divine. I shall try to show later on that Lotze has made a fatal mistake and caused endless confusion by not clearing away the ambiguity, involved in the above view, at the outset, by giving a frank theory of the relation of the finite to the Infinite mind. At present we must simply note that his logical and metaphysical speculations suffer from the absence of some such theory; they are pervaded with an unanalysed feeling of uncertainty and of submission to a higher power, due to a reluctance to close with this ultimate but fundamental problem, while yet recognising its presence. He is firmly convinced of the existence of a true Reality, but seriously doubts whether our human minds are capable of cognising it.

We can now understand his attitude when first entering into the problems of speculation in *Logic*, bk. iii. He there disclaims all pretensions to the omniscience which alone could accomplish the consummation of philosophy as a "perfected system of connected truths at once ultimate and concrete". His less ambitious object, at the outset, is "not to inquire into the content of the principles in question, but into the grounds on which in a subjective sense their certainty for us reposes" (p. 412). He realises that the facts of human cognition, such as it is, are all the immediate data we have to work upon; he therefore resolves to make the best of them, and consequently opens his inquiry with an examination of "ideas," in which all the contents of our knowledge must take shape. He does not however think it necessary to preface his investigations with an examination into the extent and manner in which an object depends for its reality on its relation to a mind; he only recognises the very obvious, not to say trivial, fact that the reality of an object is not constituted by its relation to any particular mind, and thereupon makes bold to treat the reality of ideas as though it had nothing to do with the reality of objects. He asks us to concede his very plausible postulate that, whatever reality there may be behind our ideas, it is always in the first instance with "mere ideas" that we have to deal.

Of course if "idea" simply = "that which we know," every one will concede Lotze's postulate, but a moment's consideration will show that, on this interpretation, the postulate is quite barren and tautologous. We are thus naturally led to ask: Does not Lotze import some additional meaning

into the term "idea"? I think every one who reads him must perceive that he does. He constantly adopts that "common-sense" usage of "idea," by which the term is taken to mean a representation, true or false, of an object; a "mere idea" being a representation to which no object corresponds, or a representation considered apart from its object. Instances of this popular language occur on almost every page of his. We hear of objects "corresponding" or "not corresponding" with conceptions, of things being "more than" thoughts, of "the possible," *i.e.*, the world of conceptions, being "wider than" the real, of "things" with no "counterpart" in thought, and thoughts with no "counterpart" in things. Such modes of expression are full of metaphysical assumptions, the prevailing one being that thought is a subjective and formal activity directed against an alien world of objects. It is not necessary now to examine these assumptions in detail or inquire how far they implicate Lotze in the errors of the Formal Logicians. The point is that they *are* assumptions which Lotze does not attempt to prove. Unconscious apparently of any prejudices which they may involve, he imports them bodily, now under one guise and now under another, into that originally empty and tautologous statement "we know only ideas". Indeed, this last step is absolutely necessary for him; otherwise, his proposal to "begin with ideas" would not have told him where to begin at all; now, indeed, he has obtained a very definite starting-point, but it is at the cost of converting his primary postulate into an assumption which many metaphysicians would be far from conceding to him. I think it is not unfair to say that this assumption amounts to a demand that the mind's ideas shall be grouped into a sort of picture-gallery, round which it is necessary to make a tour of inspection and comparison before it is possible to ask whether the pictures correspond to the objects of real nature from which they are taken.

It would be highly unjust to charge Lotze with deliberately attempting to conceal the need for a metaphysical justification of his postulate. On the contrary, he informs us with inimitable coolness and good faith that his assumption is the necessary basis for every possible metaphysic. It is the one stable fact of the theory of cognition on which Idealists and Realists must find common ground. Thus he says, on p. 421:—

> All we know of the external world depends upon the ideas of it which are within us; it is so far entirely indifferent whether with Idealism we deny the existence of that world, and regard our ideas of it as alone

reality, or whether we maintain with Realism the existence of things outside us which act upon our minds. On the latter hypothesis as little as the former do the things themselves pass into our knowledge; they only awaken in us Ideas, which are not things.

Lotze regards the impartiality of the above doctrine as a sure guarantee for its fairness. It is intended to be a sign-post erected, on common ground, at the parting of the ways towards Idealism and Realism. And what exactly is the "common ground"? It is the belief, to quote Lotze's words, that "knowledge under whatever form can never be things in themselves, but only represent them". Far from regarding this proposition as at all ambiguous or dangerous, he holds it to be the statement of a primary fact on which "thought is perfectly clear, and at one with itself". The reason of Lotze's confidence is easy to explain. In his anxiety to find a common point of agreement between Idealism and Realism, he asks us to choose one of two alternative propositions, *viz.*: (1) Knowledge *is* things-in-themselves: (2) Knowledge *only represents* things-in-themselves. Naturally every one, be he inclined to Idealism or Realism, will decide to adopt proposition (2), *always provided that we are compelled to choose either the one or the other.* Now Lotze makes another step which should be taken in close connexion with the above. He makes another assumption which he holds must be equally acceptable to all, *viz.*, that knowledge must *at least represent* things. Here, again, in order that this second assumption may be conceded, he thinks it is only necessary to ask us to make our choice between the alternatives—(1) thought does not represent things in any way; (2) thought *at least* represents things. Here, too, it is easy to persuade every one that they must accept proposition (2), *always provided that we are compelled to choose either the one or the other.* I wish to lay particular stress on the fact that the conditions I have italicised are ignored by Lotze, and tacitly assumed to be accepted; I hope to show in the sequel that the supposition that they are binding is one of Lotze's most fatal mistakes.

The significance for him of the above view as to the representative character of knowledge cannot be overestimated. It at once provides the justification for his Metaphysic, and furnishes ready to hand its immediate problem. For if thought does bring us reports from an external world of real things, a science of Metaphysic is possible, and it is the first business of that science to collect all the data which thought can furnish in answer to the question—"What is a thing?"

The actual steps by which Lotze's theory develops itself are as follows: Knowledge must in some way be representative, but we do not yet know in what way. We must, therefore, disclaim complicity with two prejudices which are equally liable to obtrude themselves in the phrase, "we know only phenomena". We must, in the first place, steer clear of the unwarranted presupposition that thought is, by its limitation to phenomena, thwarted in its purpose, or fails to penetrate to a real essence of things which exists in the grandeur of inaccessible solitude behind phenomena. To keep our minds free from bias, we must, in the second place, take note that there is another supposition equally possible and equally unproven. "We may at once pronounce an opposite point of view to be conceivable, which should regard things as mere means to produce in us in all its details the spectacle of the ideal world" (*Logic*, p. 431). It must be carefully noted here that in the passage from which this last quotation has been made, Lotze in no way modifies his view, as we have previously sketched it, of the representative character of knowledge. He does not deny that knowledge is representative; he does not even deny that it is representative of the unknowable; he only admits the difficulty of knowing the unknowable.

This last difficulty is made by Lotze the occasion for a new departure. He is not at all disconcerted by the discovery that he has made his "ideas" representative of something which he does not know. On the contrary, he seizes on the fact with avidity, and labelling it with the name "circle of ideas," makes immense capital out of it. For, if knowledge is only directly concerned with ideas within this circle, we have every right to neglect for the time being ugly questions about the relation of thought to an external reality, and not only can, but must, confine ourselves to the data which this circle of mere ideas provides. "Let us leave entirely out of the question the opposition between our world of ideas and a world of things; let us look upon the former alone as the material we have to deal with" (pp. 431-2). And so, after rehabilitating the Platonic world of ideas, Lotze proposes to take up the problem where Plato left it, and discover "what are those first principles of our knowledge under which the manifold world of Ideas has itself to be arranged" (p. 449). Thereupon the candour of Lotze prominently asserts itself. Fully convinced that the contents of knowledge are limited to a "circle of ideas," he wishes every one to take note of the fact; he calls upon us deliberately to watch him as he

"perpetrates" his surrender to the circle "with his eyes open".

> The circle is inevitable, so we had better perpetrate it with our eyes open; the first thing we have to do is to endeavour to establish what meaning it is possible for us to attach to knowledge in its widest sense, and what sort of relation we can conceive to subsist between the subject which knows, and the object of its knowledge, consistently with those yet more general notions which determine the mode in which we have to conceive the operation of anything whatever upon anything else. What we have to do is to obtain the last-mentioned conception, which amounts to a metaphysical doctrine, and to treat the relation of subject and object as subordinate to it (p. 451).

This passage is highly important as indicating the direction in which Lotze is driven by his doctrine with regard to the limitation of knowledge to ideas. He becomes aware of the deficiency of that doctrine, and strives to supplement it by supplying to the essentially subjective aspect of "ideas" a more stable objectivity.. Still, since knowledge is limited to "ideas," this "something more" ought, strictly, to be unknowable. It is an unknown, however, which plays such an important part that we cannot get along without taking it into account; so Lotze ingeniously proposes that, as we cannot *know* it, we must make an *assumption* or *postulate* as to what it would be like if we could know it. In this way "real things" cease to stand in an external relation to the circle of ideas; it is rather the reference of things to ideas and ideas to things which itself constitutes that circle. The assumption made, he invests it with the title "metaphysical," and erects it into the guiding principle which shall show us, as though by a miraculous intervention, how to "perpetrate" the circle of ideas. To this principle all logical inquiry must conform.

This leads us to ask, how far, and with what justification, does Lotze subordinate logic to metaphysic? Let us recollect the meaning of his terms. With him logic = the science of ideas, as opposed to metaphysic, which = the science of "things". He is not, be it remembered, attempting a regress to the grounds upon which the antithesis "thought *v.* things" is based; such a task would be equally logical and metaphysical. On what, then, does the priority of his "metaphysical assumptions" rest? In the first place, it cannot rest on their supposed reference to a Real beyond thought. For, although they be assumptions *about* that Real, they are yet out and out assumptions *of* thought; it is as thoughts alone, *i.e.*, solely in virtue of their place as members of the ideal world, that they must establish their

truth. He has told us at the beginning of bk. iii. of the *Logic* that "Truth and the knowledge of truth consist only in the laws of interconnexion which are found to obtain universally within a given set of ideas". Accordingly the supreme authority of his "metaphysical" assumptions over the circle of ideas cannot be delegated to them by an unknown power beyond that circle; it must consist of their recognised *ideal* supremacy, within the circle, over all other members of the circle. But can the "metaphysical" doctrine which is to regulate the circle of ideas stand this test? If its mysterious title "metaphysical" be ruled out of order, what special claim to sovereignty does the "law of the operation of anything whatever upon anything else" possess? Well, let us first try to understand Lotze's attitude on the subject.

Eager as Lotze is in his theory of knowledge to begin with "mere ideas" taken apart from their objects, he soon reminds us that he has a still more deeply rooted affection for "things". While professedly confining his attention to ideas, at least, we might have expected him to admit that the dominating laws of his subject-matter are those imposed by that mind to which the ideas owe their genesis; but, despite inconsistencies, he is found asserting at all hazards the pre-eminence of "things" even here. Why he should do so it is difficult to say, for he vouchsafes no explanation. I can only suggest that he has lapsed into a very plausible prejudice of "common-sense". It is a step which, however it be accounted for, is sadly mischievous in its results. His most confusing utterances on the theory of ideas are prompted by this latent assumption that "things" (whatever they may be), in virtue of their properties, produce modifications, *i.e.*, thoughts, in the cognising subject. He thinks we can treat the relation of thought to its object as a particular case to be dealt with by an application of the general laws of cause and effect. He, of course, avoids those coarser applications of these laws which figure in the pages of "scientific" philosophers; the way he utilises them is much more refined. (I shall mention some of these refinements when I come to deal with his use of the term "supersensuous".) Still the qualifications and safeguards with which he supplements it do not affect the fundamental import of his metaphysical belief in the causative action of "things". Some such belief obtrudes itself, in a variety of guises, on almost every page. It is a notion almost as characteristic of Lotze as "thought-relations" are characteristic of Green. Indeed, we might say that the root-conception from which Lotze's system of philosophical

argumentation has sprung is the assumption that some external objective reality distinct from human thought exercises a causative action on our minds.

It is characteristic of Lotze always to face his difficulties boldly, until he has explained them away; they never induce him to turn back and reconsider his starting-point. It is now our business to note some of the complications in which he is involved by the assumption of an active causality on the part of things in themselves, and to trace the devices by which he endeavours to extricate himself from his embarrassments. He has laid himself open to the charge—to put it in the grossest form—of making consciousness, which can never be anything but the subject for which objects are, into an object; for it is only objects which can stand in the relation of cause and effect. I am quite ready to acknowledge that in many passages he rises superior to this debased view of consciousness, allowing that it is something altogether unique, and admitting, implicitly, its superiority over the categories of cause and effect. (I do not allude to Lotze's ascription to consciousness of a supposed indeterministic "freedom".) But the fact remains that, instead of discarding utterly the notion that consciousness is a passive thing, he tries to patch it up, as though any amount of patching up would make what is radically wrong right.

His first concession with a view to rectifying his mistake is that thought is, in part, constitutive of knowledge; the reason being that *each* of two objects which act on one another contributes from its own nature to the resultant effect. His meaning is made apparent at the point where (p. 456), after puzzling over the "innate ideas" of Descartes, he finds the solution of that problem must be prefaced by a deliberate "assumption as to the mode in which the object of knowledge may be conceived as operating upon the subject which apprehends it". By his own chosen assumption, which amounts to a rough doctrine of causality amongst natural phenomena, thought comes under the rule that "every object is receptive of various kinds of stimuli to its spontaneity". He then goes on to show that in the resultant effect, *i.e.*, the thought-content, the particular nature of the spontaneity of thought must be taken into account.

But subsequently Lotze makes a second and still greater concession to the importance of the work of thought. Thought always puts its own colour on objects given to it; but, in some cases, it does more; it makes its own objects entirely out of its own nature. The experience of the mind is

thus of two kinds according as it is (1) made out of material which thought does not make, or (2) made out of material which thought does make entirely out of itself. Which, with Lotze, amounts to saying that thought is not only a reality *per se*, but can *per se* produce real results. "In an act of knowledge the direct contribution from the side of the object may be absent, but never that which is furnished by the subject's own nature" (p. 457). After the original "stimulus from without" thoughts may "have their source in the constitution of the mind alone".

Proceeding on these lines, Lotze half unconsciously permits himself to widen and widen the gap between thought and "things," until he gets on the one hand an hypostasised world of ideas and on the other an unknown world of "things". Once set in motion a "stimulus from without," he imagines that thought may call into being a whole world of "possible" ideas, the private property of the mind itself and distinctly independent of the world of material objects. I particularly wish to call the attention of Idealists to this last point, because I think it will enable them to see what sort of an Idealist Lotze really is. I would have them observe that his justification for his "ideal world" is based on a plausible endeavour to do justice to thought as one amongst other partially independent and partially causally interconnected objects. Is such a philosopher, I would ask them, a safe or a dangerous friend?

The importance of seriously considering this question is emphasised by the growing habit of accepting Lotze's conclusions without taking the trouble to carefully examine their source. That is what makes his influence on the philosophy of to-day such a serious matter. And he states his convictions with such a persuasive air. He coaxes men to agree with him, who never would agree with him if he tried to compel them. Indeed, if attractiveness were the only test of philosophic truth, he would stand easily first. And nowhere has he done more to popularise his views, among those who judge Idealism by its results rather than by its justifications, than in his brilliant chapter on the Platonic ideas. I allude especially to his division of Reality into three unique kinds, *viz.*, Events, which *occur;* Things, which *exist;* Thoughts, which are *valid*. There can be no doubt "validity" is a capital name to conjure with. Whether it really succeeds in conjuring away all the difficulties of Platonism I cannot stop to inquire. It is more important to notice that in Lotze's own work it renders the important service of reducing to a minimum the friction between factors

of his thought which would be otherwise incompatible with one another. And thus he eludes the rude dialectical force of mere partisan warfare, which, if left to itself, would have heightened the antagonism between thoughts and things until they destroyed each other, thereby proving the necessity for their reunion in a higher unity which transcends their differences. To the outside world "validity" comes as a message of peace, which looks so temptingly plausible that they are only too willing to accept it, without bothering their heads particularly as to what the dispute has been about. For there is no royal road to Idealism; and, after their first laborious efforts in the direction of that goal, people begin to feel dissatisfied; unused to the rarefied atmosphere, they imagine they have left solid ground behind them. Then comes the arch-tempter and whispers in their ear that Idealism is a very estimable thing in its way, only it has a little over-rated itself; let them but endorse this quite innocent division of Reality into three, for which they have the authority of Lotze—the most scrupulous and conscientious of philosophers—and all the dark riddles of philosophy shall be revealed to them. And those who swallow the bait remind us thenceforth unceasingly that "thoughts are not things," and under the spell of that pass-word all the difficulties of philosophy make way before them; and those of their former friends who still ascend to Idealism by the hard and narrow way they never cease to reproach with the taunt that they "have hypostasised an abstraction".

I have tried to indicate the groundwork of Lotze's theory of thought, in the belief that people would do well to pause before growing enthusiastic over his "world" of "really valid" thought-concepts, and soberly ask what is the basis upon which this attractive superstructure rests. But so far we have been taking a one-sided view of Lotze. That is the worst of philosophies in two pieces; they have to be inspected twice over. Lotze indeed seems anxious to save us the trouble by trying to weld the two pieces into one in his philosophy of religion. But perhaps it would be advisable to follow him more closely, without anticipating the general statements with which he concludes; let us see how far he avails himself of the advantages of Dualism before he rejects it.

He constantly sets thought in opposition, latent or explicit, to "things". It would be impossible, without unfairly suppressing his meaning, to take his doctrine of thought in isolation, because the *quasi*-independence of the other member of the antithesis is for ever asserting itself. That is why

Lotze is such a formidable opponent to attack. "Thought" is no sooner demolished than "things" gain the ascendency in this mental see-saw, and shower upon us a host of additional reasons why neither term in the antithesis can be disturbed. Popular English writers have taken a leaf out of Lotze's book. They forbid the Idealist to hypostasise thought, because they have shown thought to be impotent by investing it with the inane independence of universal validity; then, when experience testifies to the presence of something other than the bare universal in the content of thought, they triumphantly exclaim: "Behold those Real things, quite other than thoughts, which your stupid hypostasised thought has left out of the account".

It is therefore now our business to examine those claims to be independent of thought which "things" put forth. Incidentally, I call attention to a preliminary embarrassment which is apt to throw Lotze's readers off their guard. He not unfrequently changes his antithesis between ideas and reality into an antithesis between our ideas and God. He says at the outset that he will not decide whether "things" or God lie at the back of our ideas; he takes the benefit of the doubt, together with the credit for impartiality in doing so. The immensity of the difference between God and "things" as a substratum to thought is obvious enough; but, as I hope to show that his application of the notion of the Deity in this connexion is one which cannot philosophically be allowed, I think the ambiguity about the substratum need not here disconcert us.

And now, to resume, we can boldly ask *why* are "things" more than thoughts? without being overawed by fear of the insinuation that we are asking Why is God more than man? Lotze's first answer is—because they account for *a posteriori* knowledge. "The *a priori* character, however, which we thus claim in so broad a sense for our knowledge, is only one side of the matter. If we regard all forms of sensible perception . . . as modes of manifestation innate in the mind, then and for that reason the ground for this or that particular application of them, one necessarily excluding the other, cannot possibly be found in the mind" (*Logic*, p. 460). At this point Lotze's procedure needs to be carefully observed, for he is preparing the way for the transition from logic to metaphysic. Let us recollect that Lotze never saw the necessity for beginning with an analysis of the conditions of knowledge and existence. We have already observed how he takes thought for granted without asking how thought is possible; we must now trace the growth of his complemen-

tary assumption that "things" exist, and observe how strongly and irrevocably that assumption has influenced his theories, long before he brings himself to deal with the question—What are the conditions of the existence of a "thing"?

The first step towards the transition is made when he observes, and rightly enough, that knowledge must have an *a posteriori* element. But, as such an element is excluded from his narrow and formal view of thought, it must be referred to an unknown outside thought. This is the germinal conception from which his elaborated doctrine of "things" takes its rise. For the justification of his procedure we must look to his chapter on the "Real and Formal Value of Logical Acts". The argument there turns on his view of the relation between the process and the result of reasoning; or, as he puts it, the question is—When have our thought-contents a Real significance and when are they the mere "scaffolding of thought"? The main conclusion of a long and intricate discussion is that, regarded as intermediary links in a chain of reasoning, thoughts are only formal, whereas the thoughts in which chains of reasoning terminate have, or ought to have, real objects corresponding to them. In support of this he shows that judgments and syliogisms cannot have a "Real" significance, because no real object could possibly correspond, *e.g.*, to a hypothetical judgment. To adopt the simile which Lotze works out at the end of the chapter, thought is a spectator travelling by "subjective" and "formal" routes to an "objective" and "real" hill-top. Different spectators may ascend by different paths, but the view from the summit is the same for all. Now Lotze expects us to read a good deal of meaning in this simile of his. Amongst other things, he expects us to concede that, although thought in virtue of its "formality" (p. 493) is always, as it were, in touch with objective reality, yet thought as the universal result or terminus (the summit) is to be distinguished from and not limited to thought as the particular or the subjective process (the arbitrarily chosen path). "Surely," I may be told, "that is a highly plausible request. What harm can there be in emphasising the very modest truth that the universal and the particular are not the same?" Wait a moment; turning to the next page we find the illustration of the difference between universals and particulars is not as innocent as it appears to be. Lotze there tells us that in his illustrations the difference between the "arbitrary path" and the "summit" is meant to serve as a "preliminary elucidation" of the diffe-

rence between logical and metaphysical reality. I am aware that he promptly observes: "It will be better to reserve for the *Metaphysic* the fuller discussion of this important point". Very good; let us not forget the "fuller discussion"; but above all let us not be hurried away before digesting the full importance of the step he has just taken.

I think that if chapter iv. of *Logic*, bk. iii., be carefully read, especially the last three pages, it will be seen that in the explanation of this last step from logic to metaphysic is to be found the key which enables Lotze and his followers to open out their metaphysical assumptions into a working theory. We saw a little while ago that the "*a posteriori* element" pointed in this direction, by demanding that logical ideas must be supplemented from some other source. But the "*a posteriori* element" is not enough for them, because they can only extort out of it a "datum" alien to thought; for anything they can show, this datum might be a flux of particulars; in which case "things," being void of permanent qualities, could not be the subject-matter of a theory. *It is therefore necessary to universalise "things,"* so that metaphysical attributes may be predicated of them; this is done in a most subtle manner in the chapter before us. Thought had previously been stripped of its concrete particularity, in order that "things" might be clothed with reality; now its universality is borrowed from it, in order that "things" may be invested with the only property which can make them cognisable.

It is on account of this conversion of "things" into concrete universals that Lotze is able to make his divorce between thought and "things" complete and yet not suicidal. He raises the two into independent entities, and reduces their connexion from an intrinsic unity to a parallelism. There are thus (1) thoughts to which no "things" correspond: (2) thoughts and "things" which correspond to or are parallel with one another: (3) "things" to which no thoughts correspond. (1) are the outcome of the theory of "mere ideas"; (2) owe their existence to the transference to "things" of those attributes of particularity and universality which, I take it, should belong to thoughts alone. We have now to deal with (3) *i.e.*, with "things" which presume to be "more than" thoughts, with the belief, as English writers express it, that "existence is one thing, knowledge is another".

Now is the time to turn to that "fuller discussion" in the *Metaphysic* to which Lotze referred us for an elucidation of his views. It is to be found on pp. 142-4. He is dealing

with the difference between relations between the contents of ideas and relations between "real objects" or "things". He finds that "if *a* and *b*" be "simply contents of possible ideas like red and yellow, straight and curved, then a relation between them exists only so far as we think it and by the act of our thinking it". It has existence and permanence "only in the sense of being an occurrence which will always repeat itself in our thinking in the same way under the same conditions". But let *a* and *b* indicate expressly Realities, Entities or "Things". Then, although thought can institute comparisons and relations between *a* and *b* as before, "it is not these relations that we have in view, if, in order to render intelligible a connexion of the things *a* and *b* which experience forces on our notice, we appeal to a relation C, which sometimes does, sometimes does not, obtain between *a* and *b*"; such an "objective relation C," he goes on to say, "cannot be anything that takes place *between a* and *b*, because it is only thought which constitutes a 'between'". What, then, is it? Well, the upshot is: "That which we sought under this name of an objective relation between things can only subsist if it is more than mere relation, and if it subsists not between things but immediately in them as the mutual action which they exercise on each other and the mutual effects which they sustain from each other".

Possibly Lotze might have made the above remarks a little more lucid, but they contain two unmistakable and vitally important statements. They tell us that we know thoughts are more than "things," because we are presented with "*variable* relations C," *i.e.*, because the facts of our experience *change*. They tell us that, as, on the one hand, thoughts owe their reality to their presence to a mind, so "things," on the other hand, owe *their* reality to their participation in a mutual interaction between each other. The elucidation of these two points ought, if we wish seriously to regard Lotze's philosophy as a *system*, to be placed at the forefront of his *Metaphysic*. For his philosophy cannot possibly be regarded as a systematic whole unless his *Metaphysic* can be seen to be connected with and necessarily to flow from his theory of knowledge. We must carefully keep in view the reasons *why* he is justified in saying, in the Introduction to his *Metaphysic*, that the problems of that volume centre about the fact of change, taking place amongst real things.

After having seen how the mind is compelled to seek a solution of these metaphysical problems, the next step

obviously is to ask: What then is meant by "things which change"? It must here be observed that Lotze is not very obliging towards his readers. For it is a long time before any explanation is forthcoming. He refers us, it is true, to our "common-sense," which never finds the slightest difficulty in deciding what is a "change" and what is a "thing". But we are now supposed to be dealing with philosophy, and I think I am well within the mark in saying that the philosophical meaning of "change" and "thing" is very far from being a matter of common consent. It is therefore Lotze's fault, and not ours, that we are compelled to turn towards the conclusion of his speculative theories for the explanation of those terms which he uses from the beginning. He tells us on p. 1 of the *Metaphysic* that "while predicable only by metaphor of anything that is merely object of thought, change completely dominates the whole range of reality". But that is to assume, without explaining, that we know what "change" and "reality" are, and, in particular, that we know in what respects they are more than "mere objects of thought". Nor again do we get any more light on the matter from his special chapter on "Becoming and Change". He there professes to tell us the precise difference between metaphysical "things" and thoughts (p. 78). In the world of ideas "the content of a truth *a* is indeed founded on that of another *b*, but, far from arising out of the annihilation of *b*, holds good along with it in eternal validity"; whereas, in the world of changeable things, "the reality of the new is not contained in the reality of the old. It presupposes the removal of that reality as the beginning of its own." Of course there is an obvious difference between a valid truth (*e.g.*, a proposition in Euclid) and an actual fact; but that does not help us in the slightest to understand the difference between a thought and a "thing," because a thought, too, is always an actual fact as the object of the mind which thinks it, and to that mind the *actuality* of a new thought always presupposes the removal of the actuality of the old. Surely it would be preposterous first to abstract a certain (and essential) characteristic (*viz.*, their actuality) from ideas, and then to say that their difference from "things" consists in their not possessing that very characteristic.

Although I cannot find in the Ontology any explanation why a "thing" should be more than or other than a thought, I think I can find the reason why no such explanation is there forthcoming. Throughout the first book of his *Metaphysic* Lotze seems happily oblivious of the fact that Change implies Time. But our views on the import, logical and

metaphysical, of Change must depend entirely on our theory of Time. The reasons why Lotze holds that Change draws the border-line between logic and metaphysic must be found, if anywhere, in his doctrine as to the relation of Time to the cognising mind, or, as it is generally, though somewhat misleadingly, put, as to the question of the subjectivity or objectivity of Time. His verdict is pronounced on pp. 264-5. "Time as a whole is without doubt merely a creation of our presentative intellect. It neither is permanent nor does it elapse. . . . But the lapse of events in time we do not eliminate from reality, and we regard it as a perfectly hopeless undertaking to regard even the idea of this lapse as an *a priori* merely subjective form of apprehension, which develops itself within a timeless reality in the consciousness of spiritual beings." In short he finds Time or succession to be transcendentally real. I must point out that this discovery was practically a foregone conclusion, because he has, throughout the *Metaphysic* and in the theory of knowledge—in so far as that treatise borders on metaphysic—been already treating *change* as transcendentally real. Are we then to charge Lotze with a huge *petitio principii?* Without answering that question, I must insist that, whether consciously or unconsciously, his justification for treating "things" as "more than" thoughts is not to be found until we reach his theory of Time. Here for the first time come to light the full reasons for his conviction that the Idealist, or, as he often calls it, the "subjective," view of "real things" is inadequate. Even in his doctrine of space, the existence of noumenal "things" is taken for granted rather than proved; it is only out of the dictum "succession is inseparable from reality" that he is able to form the bridge whereby the mind may pass from its own world of ideas to an outer world of things in themselves.

This view of Time, if it be tenable, constitutes the stronghold of Lotze's system. For if Time is to be our passport to things in themselves, we shall carry with us a host of advantages. Let us recollect that cause and effect differ from reason and consequence in that the former are in time, the latter are not. Now if the time-relationship is in any way applicable to "supersensuous" or "intelligible" "things," it at once becomes possible to invest those "things" with a causal activity. And that is why Lotze holds himself at liberty to disregard the warning of Kant that the categories of cause and effect are applicable only to phenomena.

No sooner has Lotze completed his vindication of the

"reality" of Time than he is seized with an uneasy foreboding that he has been committing himself to a doctrine incompatible with the ultimate goal of his philosophy. He keenly sympathises with "the efforts which are ever being renewed to include the real process of becoming within the compass of an abiding reality" (p. 269). Then he goes on to give a highly significant and characteristic hint of the direction which he considers those efforts ought to take. "They will not, however, attain their object, unless the reality, which is greater than our thought, vouchsafes us a Perception, which, by showing us the mode of solution, at the same time persuades us of the solubility of this riddle." It is to the philosophy of religion, he concludes, that we must look for help.

It would lead me too far afield to describe the way in which, in bk. ix. of the *Microcosmus* and in the *Dictated Portions of the Philosophy of Religion*, he strives, by his theory of the Deity, to render his Realism compatible with his Idealism. My special reason for making the last quotation is that it affords an excellent illustration of the way in which Lotze habitually falls back on "immediate perception" as a guarantee of the superiority of "real things" over human thoughts. I briefly note three leading types of these appeals. Often he appeals to perception (1) as giving assurance of actual fact. Thought is supposed to be a spider, spinning an unsubstantial web of ideas; only when the spider catches its fly, when the mind immediately perceives something, is it certain that the meshes of thought are attached to a concrete reality. In other passages he seems to make perception do duty for (2) a miraculous revelation of things in themselves. He defends his belief by an argument from analogy. As, for example, the union of Being and not-Being presented in Becoming would be held to be impossible or miraculous, were it not a matter of everyday perception, so, he holds, the unverified inexplicabilities of his own theories might, by a divine revelation or a deeper insight, be immediately perceived to be established truths. I have already quoted an example of the sort of revelation he desires (*Metaphysic*, p. 269). The fact that the desiderated perceptions are not forthcoming does not disturb his belief in their possibility or shake his confidence in immediacy; it only induces him to appeal to immediacy under a new aspect, *viz.*, (3) "faith". The best references are *Microcosmus*, bk. ix. pp. 660-3, and ch. i. of the *Dictated Portions of the Philosophy of Religion*. The ultimate questions of philosophy, he says, "only the new and

special faculty of Faith is competent to answer". He particularly relies on religious faith, as distinct from "scientific," to give assurances of "realities" and "facts". Thus, apart from knowledge originating in external experience and mediated by the senses, "there are also inner states which are available as data for the acquisition of truth".

I began this sketch by saying that the key to Lotze's attitude when entering on the problems of speculation is to be found in his confession of a "feeling of uncertainty," arising from religious grounds. I end it with the observation that for the ultimate justification for his views Lotze again resorts to religion—this time, however, as the guarantee for a "feeling of immediate certainty".

Having first endeavoured to understand the meaning and justification of Lotze's antithesis, I propose in my next article to discuss its value.

(*To be continued.*)

II.—THE FESTAL ORIGIN OF HUMAN SPEECH.

By J. Donovan.

"Words are something," says Lamb, in his Chapter on Ears, "but to be exposed to an endless battery of mere sounds; to fill up sound with feelings, and strain ideas to keep pace with it . . . to invent extempore tragedies to answer to the vague gestures of an inexplicable rambling mime—these are the faint shadows of what I have undergone from a series of the ablest-executed pieces of this empty instrumental music."

Here is a reflexion of the gap which now exists between the sounds of music and the sounds of speech. But it could never have met the eyes of a modern ethnologist without awaking the thought that it was not always thus; for, on the contrary, the habits of music-making are found to have a closer connexion with speech, the lower down we go in the scale of human development. With the majority of modern scholars, no less than with Lamb, the connexion between measured sounds and speech is lost sight of after the "perpetual cycle of declensions, conjugations, syntaxes and prosodies" has ceased to revolve in their memories. And if it were kept in view, the measured sounds would not be thought of as belonging to music in any way. Certainly it might be remembered that (*est etiam in dicendo cantus obscurior*) "there is an obscure kind of singing in speech," and that *prosody* means "a singing accompanying the words," but for all that, words are one thing, and an endless battery of mere sounds is another. But see how the American Indian filled up sound with feeling and made ideas keep pace with it. "Long before it comes to his turn to utter his stave or part of the chant, his mind has been worked up to the most intense point of excitement. His imagination has pictured the enemy, the ambush and the onset, the victory and the bleeding victim writhing under his prowess. In thought he has already stamped him under foot, and torn off his reeking scalp. It would require strong and graphic language to give utterance, in the shape of a song, to all he has fancied, and sees and feels on the subject. Physical excitement has absorbed his energies. . . . The inspiring drum and mystic rattle communicate new energy

to every step, while they serve by the observation of the most exact time to concentrate his energy." [1]

In this, and in nearly every other report of aboriginal music-making, one meets with the opposite pole of Lamb's experience. Here there is an approach to madness from the very overflowing of thoughts and feelings. Here it is the battery of sounds that is something; and the words almost nothing. Aborigines are found uttering measured sounds with no meaning at all for hours; [2] sometimes, the sounds possess the meaning of a single word; [3] or, again, the meaning of a phrase.[4] But in every case the sounds appear able to fire the imagination with the deepest meanings.

Can this phenomenon be interpreted? Can it be made out why feeling and imagination gather around musical sounds and measured movements, the more freely, the lower is the stage of human development? This paper is written in the belief, and with the intention of showing, that it can.

It is well known that the conditions of feeling and activity out of which we find music growing, everywhere partake of a festal character. In their most exciting and animating forms these conditions belong to tribal glorification over the achievements of heroic ancestors or mythical gods; but there are scores of smaller inducements to festal excitement. Birth, age of puberty, marriage, death, the success of a hunting or marauding enterprise, in short, every event of life and nature which has awakened the reflexion that distinguishes man from brutes, is dwelt on through the means of festal excitement, and is thereby connected with the measured sounds and movements of aboriginal music.

Now what good were measured sounds amid the wild excitement of these festal players? They could bring no distinct messages to the mind, and certainly they brought no alcoholic fumes to the brain; although the behaviour of the festal players under their influence often bears the stamp of intoxication. What was there in measured sounds which could so well appeal to the savage nature that they are found to be deeply engrained in the habits of festal utterance and movement of every known tribe? Let us return to the Chapter on Ears.

[1] *Schoolcraft*, Ind. Trib. of N. America, pt. ii. p. 60.

[2] *Journ. Anthr. Inst.*, vol. xii. 392, xiii. 441, xiv. 306.

[3] *Ibid.*, vol. xii. 453; *Schoolcraft*, pt. i. 398.

[4] *Mem. de la Soc. Eth.*, vol. ii. pt. ii. 92; *Schoolcraft*, pt. iv. 71; Keppel's *Ind. Archipel.*, vol. ii. 164.

"To music it (the ear) cannot be passive. It will strive—mine at least will—spite of its inaptitude, to thrid the maze; like an unskilled eye painfully poring upon hieroglyphics. I have sat through an Italian Opera, till, for sheer pain and inexplicable anguish, I have rushed out into the noisiest places of the crowded streets, to solace myself with sounds, which I was not *obliged to follow*, and get rid of the distracting torment of endless, fruitless, barren attention!"

This passage tells the truth pitilessly; if one hates and curses them for doing so, musical sounds will, before and above all else, attract attention. And if one searched through a world of possibilities as to what could be the first impulse of making measured sounds, he would find no answer at once so simple and so satisfactory as that it was an impulse to attract and absorb the attention.

But what good was it to our festally excited ancestors to have their attention absorbed? We might refer to the Hindu Yogis who have found ecstatic delights in absorption; but they had reached a comparatively high stage of human development. We have to consider a horde of savages in the unknown time when they first began to form the habits of festal excitement. Now one of the mental characters that has given the savage the name "wild" in common with untamed animals, is the fearful, startful, and untrusting way in which he directs his attention to his surroundings. And whatever helped to absorb his attention would help to free the feelings, at the bottom of the festal excitement, from the small promptings of animal fears and appetites, and thereby increase, or at least sustain, the wild pleasures of the excitement. Therefore, if a horde once acquired the habit of festal excitement, they would have an inducement to bring regularity into the movements and sounds produced through the physical energy of the excitement. Without implying anything of the nature of conscious intention or choice, without implying that they possessed the power of speech, we may fairly assume they would be driven, at each revival of festal excitement, to feel out a way of making the sounds more and more absorbing.

Supposing that articulate speech is still only a possibility of the future, let us ask, what were the means in reach of the players for promoting the absorbing efficacy of the impressions coming from the play movements?

They could bring the movements of body, beats of sticks, stones, &c., and cries, into a more or less regular succession. But as we are at an exceedingly low stage of mental development, we must not imply either the will or the way

to make good sounding bodies, *i.e.*, musical instruments. We must fall upon the means which lie nearest to each player for making absorbing sounds, namely, their vocal organs. What a scope of variety and contrast lay in these ! There were the various changes of stress consequent upon the most trifling jerk of body or of abdominal muscles ; the changes of pitch and timbre consequent upon the modification of position in the vocal organs ; and lastly, but most important of all, the varieties and contrasts of articulation which lay in the power of fauces, tongue, palate, teeth and lips.

If the unconsciously working impulse to find as much absorption as possible through successive auditory impressions is not a fiction, the conclusion is inevitable that articulation must result from it. And however poor were the first vague attempts to articulate the uttered cries, the progress of muscular skill in producing similar checks in succession would have the same impulse behind it as induced the articulation to begin. The muscles of the vocal apparatus would gradually habituate themselves to the easiest manner of checking the vocal sounds ;[1] and the movement of lips toward each other, or of the tongue towards palate and teeth, would get educated to the production of the same checks, because their similarity for the ear would at first satisfy the dim, unconscious impulse to obtain absorbing elements of sensation in conjunction with the play excitement.

In asking what was the next step of development which an impulse like this could effect, we must not imply that it had already created any distinct consonantal articulation before it began to develop other modifications ; for instance, those of pitch and stress. The principle which embodies this blind impulse gives us no permission to lay down a chronological order of development. On that account, in the above question, "next" only means "another" step. Again our ethnological facts will guide us. The facts about the rudest stages of festal play leave no room for guessing another important direction of development which sounds took to increase their attention-absorbing power. However poor, from a musical point of view, be the results of the beating of the rudest music-makers, they are found modifying some sound in the continuous succession ; and they bring in this modification at more or less regular intervals

[1] Without regarding the fact as important evidence, it may be mentioned that savages are found checking the vocal sounds with their hands—"and his yells uttered quick, sharp, and cut off by the application of the hand to the mouth" (*Schoolcraft*, Ind. Trib., pt. ii. 60).

in the series—I mean the modification caused by an increase of stress in the blow struck. The dimmest expectation of this modified sound in the series would mean an advance in absorbing effectiveness; and this would ensure an effort to maintain the modification and make its recurrence regular. Beyond a succession of mere units of sound, there would now be a succession of groups; the regularly recurring modification marking each group of, say, two, three, or four sounds.

To produce a similar modification in the vocal utterance required only a jerk of the breath, and this means is found to be employed universally for the function of marking for the ear the accentual groups of speech-sounds.

It is not to be expected that phonetic decay, the clustering of consonants, the shifting of accents, and other inevitable results of the growth of the significant power of syllables, would leave extant many vestiges of this process of the origin of the articulations and stress accents of speech. But it is important to observe that ear-absorbing alliteration and reduplication[1] are most prevalent in the rudest stages of the development of speech; and with regard to the accent of stress, its ear-attracting function clings to it still. A moment's reflexion on our everyday speech will show that the accent of stress calls our attention most pointedly[2] to the most significant parts of words and sentences.

The notion that the rhythmical and poetical forms in traditional remnants of savage speech are witnesses of a higher stage of human development than that which exists among the savages now, is deeply rooted in popular habits of thinking, but not more deeply than in the views of special scholars. But if it is proved that the rhythmic mould of song is a direct outcome of unconscious attempts, on the part of a horde that had formed habits of festal play, to feel out a means of preserving or increasing the exciting pleasure of festal elation, then rhythmic forms may appear as witnesses of a lower stage of progress than any yet known to anthropological records, namely, the stage of the passage between brute and man.

Let us test the account which has already been given of

[1] Sir J. Lubbock calculates that in four European languages there are only two reduplicated words in a thousand, whilst in primitive languages, there are from 37 to 170 in a thousand.

[2] Heyse says: "It is a natural law that the more significant elements of our speech should be distinguished from the less significant by a stronger accentuation" (*System der Spr.*, 329; *cf.* Benloew, *Précis d'une Theorie des Rhythmes*, p. 13; Humboldt, *Verschied. der Mensch. Spr.*, 1880, ii. 170; *Journ. Anthr. Inst.*, vi. 459).

the origin of rhythmic and articulate sounds, by asking, What course of development must the sounds have taken if they were originated and moulded by festal excitement? What was there to make them significant?

They would be most generally associated with the confused elements of sensation belonging to festal play. But to point towards the general emotional states associated with the vocal utterances gives no satisfaction while the question before us relates to the particular meanings which would be fixed upon the utterances. The question to be answered is: What particular sensations or perceptions would, by the strength of their interest to the excited festal players, force themselves first into prominence out of the confused excitement?

The more trouble we take in examining the ethnological facts bearing upon the habits belonging to festal excitement, the more likely we shall be to conclude that among all the events of life which find a sort of play-reflexion in festal habits, the actions of war preponderate immensely. The war-dance is the most prevalent of all imitated actions,[1] and the feelings manifested surpass those accompanying any other actions in their realistic wildness. Besides the guidance furnished by ethnological facts, natural history has always taught that no actions of any animals equal those of war in the wildness of the feelings they excite. As there can be little doubt that the actions of war were at the root of the earliest festal excitement; the perceptions of (1) captured enemies, living or dead; (2) their possessions, females, food, &c.; (3) slain comrades of the victors, must be considered first when we look for perceptions which would, by the strength of their interest to the excited players, force themselves into prominence out of the confused excitement. The hold of such objects upon the interest of all warlike animals, whether they are co-operative or not, makes it quite safe to suppose that any of them might come into prominent notice amid the festal excitement; and every moment during which such objects, connected as they are with the natural appetites of the

[1] Even the African Pigmies (the Akka) performed the war-dance most enthusiastically (Sweinfurth, *Heart of Africa*, p. 129). The predominance of the war song and dance long ago made Langsdorff (Washington Islands) and other travellers think that although many occasions besides war awoke the excitement of song and dance at the time of their observations, yet originally the aborigines only danced and sang on their return from war. And where war-dances are not customary it is generally known that they have been in the past. (See Crawfurd, *Hist. Ind. Archip.*, vol. i. p. 122.)

animal, could be dominated by the emotional strength of festal play, and kept, however dimly, in consciousness, without firing the train of passions natural to them, would mean the melting away of a link in the chain which held the animals below the possibility of human development. Before the festal habits obtained the sway which they hold in savage communities now, how often must the passions of the lower animal have flooded the yet narrow field of (destined) human consciousness, and turned the activities of festal habit into the old activities of animal life! Unquestionable vestiges of this struggle remain in the festal habits of savages, and in the early history of the festal habits of now civilised races. The realistic frenzy with which imitations of the movements of attack upon enemies, imitations of the passionate movements of wild animals, *i.e.*, sexual, &c., are performed, is certainly a result of the discharge of passions awakened amid the festal habits, through the nerve centres which rule the actual, appetite-appeasing movements. But as long as festal excitement could last, it remained the conquering element of feeling, and was able to draw all the energy of actual passion to promote its own inherent tendencies. Some terrible examples of the moulding of animal-appetites and passions to the tendencies of festal excitement exist in accounts of the sacrificial cruelties of early festal celebrations, and revolting examples of it in accounts of "phallic rites". At whatever stage the traditional racial habits of festal celebration began to acquire symbolic meanings in the minds of celebrants, there can be no doubt, I think, that (1) bloody, human sacrifices, (2) sacrifices of animals for food, and sacrificial feasts generally, (3) phallic rites, were in their origin the results of (1) the passion for slaying enemies, (2) the appetite for food, (3) sexual passion, being drawn into the fire of festal emotion.

While considering this colouring of festal excitement by particular animal passions, we must not lose sight of the absorbing elements of sensation, the regular movements of body, the rhythmic sounds of sticks and stones, the rhythmic and articulated cries. It is perhaps impossible to estimate too highly the value of this absorption for enabling the festal excitement to mould the natural passions according to its own tendencies, instead of being destroyed by them.

Besides the perceptions from captured objects of desire, it was inevitable that the great changes of nature which intimately affect all animal life, should at one time or other obtain prominence in festal excitement. How many

circumstances helpful in gaining a victory over enemies or wild animals, or conducive to the welfare of the horde in other ways apart from fighting or hunting, would be noticed occurring in connexion with the changes of light and darkness, summer heat and winter cold, the storms, the rising and falling of rivers, and fire?

The answer to the question from which we set out, namely, What would be the history of the articulated sounds as they developed in their full rhythmic mould? may run as follows. They came into existence through the help they offered in preserving the elements of feeling belonging to festal play, and it is impossible that they should not go on with their function when the elements grew more distinct, and when the festal excitement was coloured by particular perceptions—now a slain leader, again captured booty; now the thunderstorm, again the bright moon. In the early history of articulate sounds they could make no meaning themselves, but they preserved and got intimately associated with the peculiar feelings and perceptions that came most prominently into the minds of the festal players during their excitement. Articulate sounds could impose no particular order upon the confused feelings and perceptions of festal play; they could only wait while they entered into the order imposed upon them by the player's wild imitation of actions, and then preserve them in that order. Articulated utterances, in short, merely took up the acted stories of deeds of glory which began in wild confusion when festal play first began, but gradually found order through the festal impulse to bring all the sensations and perceptions that asserted themselves repeatedly into the order peculiar to fighting, destroying, rapacious warriors.

These are the considerations which oblige us to run counter to the notion that song, or rhythmical and poetical forms, must be supervening embellishments of speech which imply a certain height of civilisation. We have tested the account given of the festal origin of rhythmic forms and articulations, by leaving sounds aside and following the inevitable course of cohesive order which would take place among the sensations and perceptions dominant during festal excitement; and we come to the very cohesive principle which holds together whatever ideas there are in aboriginal songs and myths, namely, the principle of action —generally the impulsive action of beings in whom the lowest animalistic impulses are mixed up with impulses of a human character. But it remains to be asked whether there was anything in the festal impulses that will account

for the power which rhythmical and articulate utterances acquired in marking the details or relations of the actions, for example, their relation to individuals.

In the accounts we possess of festal excitement in the lower stages of human development, it is marked by no impulse so universally as by the impulse to glorify the strength and prowess of the community through its prominent members, ancestral or living. How could it be otherwise with excitement which was made to gather up in itself all the wild communal feeling of a horde in actual war? If a horde that had begun to acquire the habits of festal excitement had in other respects only the intelligence of wolves or jackals, the excitement must in time give birth to and nourish a desire to assert at least one grammatical relation of an action of war, that is, its personal relation.

Whenever a powerful and bold fighter asserted himself in actual war, the seeds would be sown which must grow into a desire to assert this fighter and his prowess amid the excitement of future, festal imitations of the actions of war. Many circumstances, which must occur at some time or other, would favour the growth of this desire.

First may be mentioned the self-assertion of the strong individual. (It is a distinguishing characteristic of the savage hero to boast of his deeds during festal excitement. Nothing brings the character of Homeric heroes nearer to that of the leaders among contemporary savages than this personal assertion.)

(2) The absence of the brave fighter at the time of the festal excitement which followed his brave deeds.

(3) The presence of his dead body. (It is hardly necessary to point to the universal prevalence of funeral dances and sung praises of the dead hero.)

(4) The imitation of a particularly great feat of a strong individual by one or more of the players who saw it performed in the battle. Any of these occurrences would tend to force the image of a particular fighter into the consciousness of the excited players while it was occupied with the general conception of victorious battle, and thus make their emotion and its expression in imitated actions and vocal utterances, an acted song of individual praise.

When a dog rushes savagely upon another and passes other dogs on his way, he acts upon the principle, "that, not these," quite as efficiently as if he could utter an articulate sound expressing the grammatical relation. A ruffian in a passion might rush upon another man, and though he possesses the articulate material and the mind for marking

the personal relation of his intended action, it avails him not to do so ; he may only growl like the dog. The animal instincts guide to their object as well without the material for marking personal relations as with it.

This is very obvious, but one who bears it in mind will better perceive the superiority of the festal impulse over any life-caring impulses in regard to creating the desire of marking the personal relations of an action—to say nothing about supplying the vocal material. Without the vestige of a conscious intention behind it, this impulse induced the players to dwell on some sort of an image of an individual in relation to the actions imitated, whilst rhythmical and articulate utterances were absorbing ear and mind, and, at the same time, getting fixed upon the perceptions which they were associated with repeatedly.

The fixing of the vocal utterances depended a great deal, perhaps, upon those who surrendered themselves most completely to the festal impulses. The impulses to realise the actions of the mighty members of their horde with all the detail possible, and to preserve the regularly recurring movements and utterances in their habitual order, would be followed with most zest by the specially clever actors and celebrants, the prototypes of medicine men, dancing dervises, shamans and yogis. The ecstatic results of the aural reverie or absorption would be felt most by these, and lead them to make the greatest efforts to furnish the sounds to sustain it. These would most keenly feel the disturbance caused when a group of syllables which had been associated repeatedly with one action was produced with another. The disturbance would consist of an interruption of the smooth absorption, and those who felt it most would try to avoid what caused it ; that is to say, they would keep particular groups of syllables in regular connexion with particular actions, and thus, without any object besides the blind following of the pleasure of festal elation, they would be gradually endowing the syllables with meaning. I will try to illustrate by such syllables as are met with in savage choruses. But it must be remembered that in the earliest stages of the development of articulation, the syllables repeated were not like the syllables of a savage chorus as they are now known. If the syllables of a savage chorus were meaningless a century ago, the traveller might confidently expect to find them meaningless now. In fact it would be as great a wonder to find that they had acquired meaning, as it would be to find that the syllables *Fal-la-la*, or *Tira-lira !* &c., were now settled verbs or substantives, because they were used for

refrains in the middle ages. These syllables were not wanted for significance, for language was developed already.

The syllables whose history we have to follow were not sung by developed men in possession of other articulate syllables with conceptual meanings clinging to them and rendering them fit to mark any object they cared to mark. Suppose then, that, with no concept-bearing syllables in existence to compete with them—

(1) *Kín-wi-ki-kín-wi-ki-wá-ya-ya* are repeated during the wild festal imitation of the setting out of the hero and his horde, their passage over mountains and rivers, &c.

(2) *Gá-wan-ga-gá-wan-ga-wá-ya-ya* are repeated during the imitation of their coming in sight of enemies, attacking and destroying them.

(3) *Ví-ni-ka-ví-ni-ka-wá-ya-ya* are repeated during the imitation of the seizure of the enemies' possessions, eating, and otherwise satisfying appetites.

With each revival of the excitement of this festal play, the elements of feeling and imagined action must become more and more cohesive; they must become like a new instinct or habit, ready to flash into active sympathy in response to any impressions of nature akin to them. Thus, the vague groups of sensations held together by festal absorption in the actions of the strong fighter, as he fell upon enemies and destroyed them, must sometime be awakened into activity by the sight of a ravaging fire or the destructive overflowing of a river; and as sure as the group of dramatically cohesive sensations were awakened into activity, the articulate utterances, which were a part of them in the festal excitement, would accompany them. In this way, from being connected, as a sort of aural connecting bond, with the confused concept of *destroying*, *gáwanga* would become its vocal mark, and be uttered when any objects of nature gave impressions which could, however faintly, touch the spring of the latent mass of sensations belonging to the festal imagining of the destroying warrior. The same may be said of the syllables of the other two phrases in the illustration. A mass of sensations rendered slightly cohesive as a concept of *wandering forth* would be ready for sympathetic response to impressions conveyed by, say, a wandering herd of the quieter sort of animals, moving clouds, the sun or moon; and the syllables *kínwiki* would become their vocal sounding mark. A vague concept, which we would describe as *eating* or *enjoying*, would be ready for sympathetic response to impressions conveyed by, say, animals that were oftenest seen satisfying their appetites; and *vínika* would become their vocal mark.

It will be observed that there was plenty of time for any little affinities of impression to assert themselves in the consciousness of these festal players. For example, if the affinities between impressions of moving clouds and the cohesive group of sensations belonging to the festal imitation of the setting forth of warriors, did not assert themselves at once, or were vaguely felt and then lost again, the cohesive group would be still held together, ready for any favourable circumstances of the future. The festal impulses which drew the groups of sensations into cohesion did not depend in any way upon the progress in naming objects of nature which was made by the syllables connected with the different cohesive groups. The pleasures which created the festal habits sustained them by their first blind impulses, quite independently of this further turn of development; although in time the results of naming would enter into the heart of the festal excitement, and give it an impetus which it could never receive from the bare rhythmic sounds and movements. Then, the mere ear-absorbing sequences of sound would have to yield to the interests of significance.

It could never have given much satisfaction to a philologist with modern habits of mind to be told that he may begin his interpretations at the rudest possible stages of the development of speech, but he need not think of the problem of its origin, as that is the rubicon between brute and man. Ordinary scientific instincts must whisper to the philologist that the secret of origin would save enormous labours of plausible guessing about those early stages of development which he is allowed to grapple with. For instance, if he is invited to consider a root-period of development, a period of the acquisition of grammatical forms, and then a myth-making period, he might well feel that the problem of origin, like a tough weed that ought to have been cut down at the outset, has sent forth three branches each as vigorous and obstructive as itself.

Yet the masters of philology who have uttered cautions against the forming of opinions about origin had good grounds for doing so. As there was no evolutionistic view of origin which did not look to some kind of life-caring impulses, what use would such views be in face, say, of grammatical forms? What miracles would it require to bring the broken and separate cares of appetite and passion to establish these forms, even if the vocal material and the desire for marking grammatical relations were at hand, and nobody asked how appetite and passion could create them?

If festal habits had not been brought forward to account for the vocal signs of concepts of actions, the problem of the origin of grammatical forms would point directly to them, or rather to the euphonic aspects of them. One who merely glances over the grammatical forms of any primitive language, and observes the great euphonic variety of sounds elaborated out of a few simple elements, must be struck with the fact that a similar phenomenon is displayed by the art of music. In respect of rhythmic grouping, the similarity is complete; and the contrast and likeness between individual sounds and groups in speech display a strong musical impulse in "vocalic harmony," as well as in the contrasts and varieties of consonants. But the guidance offered by these exterior suggestions is of small value in comparison with that offered by a simple pursuance of the principle upon which the articulate sounds acquired meaning.

When particular syllables got fixed upon particular actions they would be brought up with them, and here two chief interests of the festal excitement would begin to clash, the interest of significance, and that belonging to the impulse to make the vocal apparatus produce the easiest possible enticements for the ear. As soon as a rudimentary significance was felt, that is to say, as soon as it was felt as wrong or disturbing to use any but a particular few syllables in connexion with the imitation of a particular action, these few syllables would be brought up with the action, whether or not their production at this moment disturbed the absorption of the ear. The impulse to utter sounds which would attract the ear most easily would be driven to make the best of it by the easy repetition of the syllables used to fill up the rhythmic phrase, after the occurrence of the significant syllables. This filling up of the rhythmic phrase is suggested by the syllables *wá-ya-ya* in the above illustration, if such an illustration is necessary for pointing out facts which are apparent in every stage of the progress of language. In the familiar observation of travellers about the "unmeaning interjections scattered here and there to assist the metre" of savage songs, as well as in the most polished alliterations, assonances, rhymes, refrains and burthens, there can be no doubt that we behold the demands for aural absorption trying to make their way among syllables which have been fixed by significance. Of course, in these later stages of development, we see the simply ear-attracting syllables driven out of the significant phrases altogether, and left to refrains. There could be neither room nor inclination for them among syllables which had

the full power of language. But in the earliest stages of development, when no significance clung to any syllables besides vague concepts of actions, the still meaningless syllables would fall thick about them and become a ready material for signifying the personal and temporal relations of the actions.

With regard to explaining the progress of significance, it would be an obvious mistake to look exclusively toward the working of the blind impulses of festal excitement. When we approach the use of grammatical tools we are certainly at the confines of what could be effected under these blind impulses. Indeed it is a question whether the rudest articulate fixing of concepts of actions would not assert the communicative utility of the syllables. If the sight of a lion touched the spring of the latent mass of perceptions made cohesive by the festal imitation of the destroying warrior, and caused even a fragmentary imitation of the action, and the utterance of a little group of the associated syllables (*i.e.*, *gawanga*), the utility of the fragmentary act or gesture and the utterance must begin to loom in consciousness, however dimly, and make their further use an affair of intention. I shall make no attempt to show how impulses of festal excitement came to blend with conscious endeavours to make distinctions of meaning, or what the results of the blending would be. But it might be shown that the syllables used blindly to fill up the rhythmic phrase after the occurrence of the few syllables which had acquired a fixed meaning were very apt for the marking of grammatical relations.

First, the nature of the problem of the origin of grammatical meanings should be made clear. The elements of the conceptual meanings of actions were held together by the bodily imitation of the actions ; but there were no imitated actions to create and combine the vague notion of a personal or temporal relation of many different actions, and fix it on a particular few syllables. What was there instead? The inevitable growth of a conscious effort to distinguish has been pointed out already. But how admirably the blind festal impulses were adapted to meet the conscious efforts half-way ! Let us take the fixing of a personal relation as an example.

It is hardly necessary to insist further on the reality of the festal impulse to dwell on the image of a prominent member of the horde during the excitement of the play imitation of the actions of war. The impulse that created headstones and other rudiments of sculpture is not a thing

of speculation. The same may be said of refrain-syllables in aboriginal songs, the syllables, namely, which are brought up unchanged for the mere attraction of the ear, for the filling up of rhythmic phrases after the occurrence of syllables of fixed meaning. At the stage of development which we are considering we have the meaning of different concepts of actions fixed upon different little groups of syllables; and it is obvious that so far as these syllables predicated the actions at all, they predicated them of the member or members of the horde whose image dominated the festal excitement. Now what could prevent some of the continually repeated refrain-syllables from fixing themselves gradually upon whatever vague desire existed to assert a demonstrative or pronominal notion? At any rate (and this is all that is claimed), the refrain-syllables would be a well-prepared grammatical material when a conscious effort to mark a personal relation came to be made. Because, just as the notion of the personal relation floated around successive and different actions, the auditory impression of these refrain-syllables floated around the successive, and different, action-predicating syllables.

The permanent use of one grammatical tool would mean the swift creation of the need of others; and the vocal material for them would be supplied in plenty always by the impulse to supply the articulate food for aural absorption.

One who holds this view of the origin of grammatical forms will, I think, see no impenetrable mystery in the wondrous regularity and euphonic adaptiveness of the grammatical forms of primitive languages; and with regard to cultured languages, it may be remarked that Prof. Sayce quotes late studies by Bergaigne and Meyer in support of his own conviction that a "thoroughgoing examination of the Aryan declension would show that its origin was similar to that of the Semitic noun, the cases being differentiated, as the need of them arose, out of various more or less unmeaning terminations".[1] And again, he says, "when the conception of a locative case, for example, first arose in the mind of the Aryan, he selected some formerly existing but hitherto meaningless suffixes to express the new relation, and so turned a mere phonetic complement, a mere formal sound, into a grammatical inflexion".

[1] *Princ. Comp. Phil.*, 3rd edit., p. 396.

III.—THE LOGICAL CALCULUS. (III.)

By W. E. Johnson.

§ 1. In the two previous numbers of Mind, I gave a general view of the scope of logical symbolism. In the present article, I propose to exhibit the working of the calculus in greater detail. I must begin by recapitulating the points maintained in my first article. Logic is regarded as concerned primarily with the principles of propositional synthesis. In the first instance, then, literal symbols will be used to represent unanalysed propositions. The fundamental mode of synthesis—called *conjunction* par excellence—I take to be that indicated by the word *and*. This mode of conjunction will be simply symbolised by juxtaposition of the propositions conjoined. The fundamental relation between proposition and proposition—called *contradiction* or *negation*—is that indicated by the particle *not*. This particle will be represented by a *bar*, drawn over the proposition or conjunction of propositions to be contradicted. It should be explicitly stated at the outset that the negation or the conjunction of unambiguous propositions yields an unambiguous proposition. Hence the formulæ that hold for propositions in general hold for the negation and contradiction of propositions. The following are the formal universal laws of propositional synthesis, expressed by means of =, the symbol of equivalence :—

I. The Commutative Law ; $xy = yx$.
II. The Associative Law ; $xy.z = x.yz$.
III. The Law of Tautology ; $xx = x$.
IV. The Law of Reciprocity ; $\bar{\bar{x}} = x$.
V. The Law of Dichotomy ; $\bar{x} = \overline{xy}\ \overline{x\bar{y}}$.

In the derivation of rules, it will be unnecessary to make explicit reference to the first two laws, as they have their equivalents in ordinary Algebra. The third law allows us to repeat, or to cancel the repetition, of any determinant. The fourth law is chiefly applied to give a reciprocal form to any equivalence. For instance, since $x = \bar{\bar{x}}$, the reciprocal form of the Law of Dichotomy is $x = \bar{\bar{x}}\bar{y}\ \overline{\bar{x}\bar{y}}$. The Law of Dichotomy itself, which is the chief instrument of the calculus, may be applied either to *resolve* any proposition into two determinants, or to *compound* a pair of determinants

into a single proposition. We shall use the terms *Resolution* and *Composition* in referring to these two applications of the law.

The omission of determinants will be indicated by the symbol . . ., as explained in my last paper. Hence the partial equivalence $a = \ldots c$ must be read: "a contains c as a determinant". A proposition that denies a conjunctive will be called a *disjunctive*. Disjunctives are either *simple* or *complex*. A simple disjunctive is one that disjoins single letters or their contradictories, such as $\overline{xy}$, $\overline{xy\bar{z}}$. A complex disjunctive is one that contains subdisjunction; *i.e.*, that disjoins a proposition that is itself a disjunctive, such as $\overline{x\overline{yz}}$. In § 2, I shall deal with simple disjunctives, and in § 3 with complex disjunctives.

§ 2. *Rule of Elimination:* $\overline{xa}\ \overline{\bar{x}c} = \ldots \overline{ac}$.

For $\overline{xa} = \overline{xac}\ \overline{xa\bar{c}}$ by Resolution;
and $\overline{\bar{x}c} = \overline{\bar{x}ac}\ \overline{\bar{x}\bar{a}c}$ by Resolution;
but $\overline{xac}\ \overline{\bar{x}ac} = \overline{ac}$ by Composition.

This shows that $\overline{ac}$ is a determinant of the given combination; *viz.*, the determinant from which x has been eliminated. The rule of elimination may be thus rendered: *Terms that are disjoined with x and with $\bar{x}$ may be disjoined with one another.* By repeated application of this rule, we may eliminate x from a conjunction of any number of simple disjunctives. Thus:—

$$\overline{xa}\ \overline{\bar{x}c}\ \overline{\bar{x}e}\ \overline{xg} = \ldots \overline{ac}\ \overline{ag}\ \overline{ce}\ \overline{cg}.$$

The derivation of such results requires—besides the commutative and associative laws—also the Law of Tautology. The required determinant is found by disjoining every term disjoined with x with every term disjoined with $\bar{x}$. Again, we may eliminate in the same way any number of terms, x, y, &c. Thus:—

$$\overline{a\bar{x}}\ \overline{c\bar{y}}\ \overline{xy} = \ldots \overline{ay}\ \overline{c\bar{y}} = \ldots \overline{ac}.$$

The derivation of the rule shows, moreover, what determinants have been omitted in arriving at the required determinant: *viz.*, in the fundamental formula given above, $\overline{xa\bar{c}}\ \overline{\bar{x}ac}$. These, together with $\overline{ac}$, make up the full import of the original combination.

§ 3. In this section we shall show how any complex disjunctive may be resolved into simple disjunctives. To establish this we may first prove two minor rules of simplification:—

Rule of Inclusion : $\overline{a\bar{c}}\ \bar{c} = \bar{c}$.
For $\bar{c} = \overline{\bar{a}c}\ \overline{ac}$ by Resolution.

Hence the determinant $\overline{ac}$ in conjunction with $\bar{c}$ is, by the Law of Tautology, superfluous. Writing $\bar{c}$ for c, we obtain the reciprocal rule $\overline{a\bar{c}}\ c = c$.

Rule of Exclusion : $\overline{ac}\ c = \bar{a}c$.
For $\bar{a}c = \overline{\bar{a}c}\ \overline{\bar{a}\bar{c}}\ c$ by Resolution of $\bar{a}$,
$= \overline{ac}\ c$ by Reci[1]. form of Inclusion.

Writing $\bar{c}$ for c, we obtain the reciprocal rule $\overline{a\bar{c}}\ \bar{c} = \bar{a}\ \bar{c}$. By aid of these two subsidiary rules, we proceed to prove the

Rule of Distribution : $\overline{x\overline{ac}} = \overline{x\bar{a}}\ \overline{xc}$.

For $\overline{x\overline{ac}} = \overline{x\overline{ac}\ c}\ \overline{x\overline{ac}\ \bar{c}}$ by Resolution,
$= \overline{x\bar{a}c}\ \overline{x\bar{c}}$ by Exc[n]. and Inc[n].,
$= \overline{x\bar{a}c}\ \overline{x\bar{a}\bar{c}}\ \overline{xa\bar{c}}$ by Resolution,
$= \overline{x\bar{a}}\ \overline{x\bar{c}}$ by Taut[y]. and Comp[n].

The Rule of Distribution thus enables us to get rid of all complex disjunction. Hence, after reducing any complex combination to a conjunction of simple disjunctives, we may apply the rule of elimination.

§ 4. *Interpretation of the Preceding Rules.* The advantage of deriving the rules in the above forms is that we may give a variety of different interpretations to each formula, and thus bring various logical processes under a common principle. We have only to interpret the disjunctive $\overline{xy}$ in one or other of its four forms, *viz.*, (1) If x then $\bar{y}$; (2) If y then $\bar{x}$; (3) Either $\bar{x}$ or $\bar{y}$; (4) Not-both x and y. Take, for example, the Rule of Exclusion, which may be written:—

(1) $\overline{\bar{a}c}c = \ldots a$ (2) $\overline{a\bar{c}}\bar{c} = \ldots \bar{a}$
(3) $\overline{\bar{a}\bar{c}}c = \ldots \bar{a}$ (4) $\overline{ac}c = \ldots \bar{a}$.

This rule gives the formula for any argument involving a hypothetical, alternative, or disjunctive combined with a categorical premiss. Thus :—

(1) If c then a, but c $\therefore$ a (Ponendo Ponens).
(2) If a then c, but $\bar{c}$ $\therefore$ $\bar{a}$ (Tollendo Tollens).
(3) Either a or c, but $\bar{c}$ $\therefore$ a (Tollendo Ponens).
(4) Not-both a and c, but c $\therefore$ $\bar{a}$ (Ponendo Tollens).[1]

[1] It is clear that the argument "Either a or c, but c, $\therefore$ not a" is only valid in so far as it rests on the *disjunction* of a and c, not on their *alter-*

Again, the Rule of Elimination contains the principle of the 'middle term' of syllogistic arguments. Thus:—

$$\overline{\bar{x}a}\ \overline{x\bar{c}} = \ . \ . \ . \ \overline{a\bar{c}}$$

may be interpreted: "If a then x, and if x then c; $\therefore$ if a then c," in the first figure. The same formula gives arguments in the other three figures, as well as equivalent arguments in alternative or disjunctive form. The arguments deduced from this are of the general nature of the *dilemma*. Thus the second result deduced above from the rule of elimination may be interpreted: "If a then x and if c then y; but either not-x or not-y; $\therefore$ either not-a or not-c".

I have given these elementary illustrations in order to show how the fundamental laws regulating pure synthesis and negation may be applied in building up arguments of gradually increasing complexity. It will be seen that a formally inferred conclusion is always a *formal determinant* of the premisses. And, if desired, we may introduce the omitted determinants which, with the conclusion, make up the full import of these premisses. Thus, in the syllogism of the first figure given above, the omitted determinants are $\bar{x}ac\ x\bar{a}\bar{c}$, *i.e.*, "If a and c, then x; and If x, then a or c".

§ 5. *The Constant of Propositional Synthesis.* In Algebra the symbols 1, 2, 3 . . . have *constant* values, as contrasted with the letter-symbols a, b, c . . . which may have different values in different contexts. Similarly, in Logic, we shall find that there is one form of proposition which (with its contradictory) has a constant propositional value. The theorem that expresses this principle is the

Rule of Constancy: $a\bar{a} = c\bar{c}$.

For $a\bar{a} = \overline{\bar{a}c}\ \overline{\bar{a}\bar{c}}\ \overline{ac}\ \overline{a\bar{c}}$ by Resolution. And, since $c\bar{c}$ may be similarly resolved into the same set of determinants differently grouped, we have $a\bar{a} = c\bar{c}$. In words: *Any conjunction of contradictories has the same propositional value*, and may, therefore, be always expressed by the same symbol. In order to avoid the numerical implications of the symbols 0 and 1, I shall use the Greek letters ϕ and τ to represent this constant and its contradictory. Thus ϕ will represent a formal falsity or *falsism*, and τ will represent a formal truth or *truism*. The rules for the conjunction of ϕ and τ with any other proposition are the following:—

nation. Hence the proper form for expressing the argument *Ponendo Tollens* is that given in the text.

Rule of Nonsignificance : $a\phi = \phi$.

For $a\phi = aa\bar{a} = a\bar{a} = \phi$.

Rule of Insignificance : $a\tau = a$.

For, in the Law of Dichotomy, $\overline{ac}\ \overline{a\bar{c}} = \bar{a}$,

Write a for c, thus : $\overline{aa}\ \overline{a\bar{a}} = \bar{a}$;

that is $\bar{a}\tau = \bar{a}$.

In this way we have proved our right to introduce these constants ϕ and τ into the logical calculus, by deducing their existence and modes of combining with other propositions from the fundamental laws. The rules of conjunction may be read : *The conjunction of a falsism with any proposition is a falsism :* and *a truism may be omitted as an insignificant determinant.* Regarding determination as analogous to addition, the Laws $a\phi = \phi$ and $a\tau = a$ are respectively analogous to the Arithmetical Laws $a + \infty = \infty$ and $a + 0 = a$. In other words, ϕ is the *infinite,* and τ the *zero* of determinative synthesis. This observation shows the degree of arbitrariness involved in Boole's plan of representing these symbols by 0 and 1 respectively.

An obvious corollary from the Rules of Nonsignificance and Insignificance is that :—

$$\overline{ac\bar{c}} = \tau.$$

For $\overline{ac\bar{c}} = \overline{a\phi} = \bar{\phi} = \tau$.

Interpreted in hypothetical form, this becomes : " If a and c, then c " is a truism. That is, the formula $\overline{ac\bar{c}} = \tau$ in which the rules of falsism and truism are combined may be interpreted as exhibiting the *Principle of Formal Implication.*

The use of the constants τ and ϕ requires some discussion. Boole used non-formal equations $x = 1$ and $x = 0$ to represent respectively " x is true " and " x is false ". But this procedure appears to suggest an illusory distinction between the propositional symbol and the equation. For the formal logician, in admitting into his system the judgment " x is true " or " x is false," admits neither more nor less than the judgment x or $\bar{x}$. If x is a non-formal proposition, formal logic cannot guarantee its truth : it can only regard it as a *determinant* of the system of truth obtained from other than formal sources. Hence instead of using *equations* to represent non-formal judgments, I shall use separate letter-symbols x, $\bar{x}$. Instead of distinguishing x from $x = 1$, Formal Logic requires to distinguish a non-formal judgment —for which 1 *cannot* be substituted, *i.e.*, which *cannot* be

omitted as an insignificant determinant—from a formal judgment—for which 1 *may* be substituted, *i.e.*, which *may* be omitted as as insignificant determinant. In my method, therefore, an explicit equivalence indicated by the symbol =, must always be understood as a *formal* equivalence.

§ 6. *General Formula for Expansion and Elimination.* By continued application of the Rule of Distribution, we have seen that any complex may be resolved into a conjunction of simple disjunctives. Consider then any letter x. The disjunctive $\overline{x\bar{x}a} = \tau$ may be omitted as an insignificant determinant. Again, a disjunctive involving neither x nor $\bar{x}$ may, by the Law of Dichotomy, be resolved into two disjunctives—one containing x and the other $\bar{x}$. Lastly, by the Rule of Distribution, the disjunctives containing x may be compounded into a single disjunctive containing x, and those containing $\bar{x}$ into a single disjunctive containing $\bar{x}$. Thus any complex, say $\overline{f(x)}$, involving x may be written :—

$$\overline{f(x)} = \overline{xa}\ \overline{\bar{x}c} = \ldots\ \overline{ac} \text{ by Elimination,}$$

where a and c do not contain x and are, therefore, unaltered when any value is given to x. If then we give to x successively the values τ and ϕ, we have :—

$$\overline{f(\tau)} = \overline{\tau a}\ \overline{\phi c} = \bar{a}\ \bar{\phi} = \bar{a}\ \tau = \bar{a}\,;$$
$$\overline{f(\phi)} = \overline{\phi a}\ \overline{\tau c} = \bar{\phi}\ \bar{c} = \tau\ \bar{c} = \bar{c}.$$

Hence, by Reciprocity, $a = f(\tau)$ and $c = f(\phi)$.

$$\therefore \overline{f(x)} = \overline{xf(\tau)}\ \overline{\bar{x}f(\phi)} = \ldots\ \overline{f(\tau)\,f(\phi)}.$$

This result is equivalent to Boole's formulæ of Expansion and Elimination. It also contains the rule for evaluating x, *i.e.*, for finding what consequent follows on the supposition of x, and what antecedent must be supposed from which x will follow. That is, interpreting the two determinants of $\overline{f(x)}$ in hypothetical form, we have :—

(1) If x then $\overline{f(\tau)}$ = If $f(\tau)$ then $\bar{x}$.

(2) If $\bar{x}$ then $\overline{f(\phi)}$ = If $f(\phi)$ then x.

It should be explained that the rules of this section are not intended to be used for working out particular problems. For this purpose much simpler methods may always be adopted. The rules give the general form that any solution of a problem will take, and are, therefore, of considerable theoretic interest. But they are even less necessary or con-

venient for the solution of particular logical problems than are the general formulæ of Algebra for the solution of algebraical equations. But they have also a definite value, in that they enable us to prove the validity of *general methods* of solution, by supplying us with a form of proposition which is at once (1) universal, and (2) simple.

§ 7. *The Formal Introduction of Alternative Synthesis.* We define (x or y) to mean the contradictory of ($\bar{x}$ and $\bar{y}$). Hence, by the law of Reciprocity, the contradictory of (x or y) is ($\bar{x}$ and $\bar{y}$); and, by the same law, the contradictory of any combination is found by replacing every constituent proposition by its contradictory, and every *and* by *or*, and every *or* by *and*. Now our formulæ of equivalence involve (1) *variable* symbols, such as x, y, which, being understood as universals, may be replaced by any other variable symbols, and (2) *invariable* symbols (*viz.*, *and* and *or*, ϕ and τ) which *cannot* be replaced by any other symbols. Given any equivalence, then, we may replace each *variable* by its contradictory, and then take the contradictory of both sides of the equivalence. The result of this double transformation is that every *and* has been replaced by *or*, every ϕ by τ, and conversely, while the *variable* symbols have remained unchanged.

Every formal equivalence has, therefore, two reciprocal forms. The several formulæ may be simply deduced from those of (1) Dichotomy, and (2) Distribution : *viz.* :—

(1) $x =$ (x and y) or (x and $\bar{y}$).
(1′) $x =$ (x or y) and (x or $\bar{y}$).
(2) x and (y or z) = (x and y) or (x and z).
(2′) x or (y and z) = (x or y) and (x or z).

Thus, in (2), replace z by $\bar{y}$, and we have from (1)

(3) x and (y or $\bar{y}$) = x.
(3′) x or (y and $\bar{y}$) = x.

Writing y or $\bar{y} = \tau$; y and $\bar{y} = \phi$, (3) gives the rule of Insignificance : *i.e.*, τ is insignificant as a determinant, and ϕ as an alternant.

Also, if we express any function of x in the form—

(4) $f(x)$ = (a and x) or (c and $\bar{x}$);
(4′) $f(x)$ = (a or $\bar{x}$) and (c or x),

we see that $a = f(\tau)$ and $c = f(\phi)$.

Lastly, by the rule of distribution, "a *or* c" is a determi-

nant, "a *and* c" is an alternant of the above expression. That is, the elimination of x gives these results :—

(5) $f(x)$ contains $f(\tau)$ or $f(\phi)$ as determinant ;

(5′) $f(x)$ contains $f(\tau)$ and $f(\phi)$ as alternant.

§ 8. *The Selection of Determinants or of Alternants.* It has been already pointed out that any determinant of a given synthesis is a *conclusion* that would formally follow from the supposition of the given synthesis ; and that an alternant is a *premiss* from the supposition of which the given synthesis would formally follow. Thus a determinant may be called an *implication*, and an alternant may be called an *explanation.* The implication is less determinate, while the explanation is more determinate than the given complex. Thus the discovery of implications is of the general nature of Deduction, that of explanations of the general nature of Induction. The implication or explanation that is sought is in general of some assigned description. In such a case we seek the *most determinate* implication or the *most indeterminate* explanation possible under the assigned conditions of the problem. In other words, we make as small a sacrifice of precision in the case of an implication, and as small a sacrifice of caution in the case of an explanation. In particular, our ignorance as to the truth or falsity of some constituent proposition x leads to the need for an *implication* that is independent of x. And a postulate that reality is not contingent upon the truth or falsity of some constituent x leads to the presumption of an *explanation* that is independent of x. In both these cases we find a result that involves the elimination of x. The general solution of such problems is given at the end of the last section. Thus, if $f(x)$ is any given complex involving x, the most determinate implication not involving x is $f(\tau)$ or $f(\phi)$; the most indeterminate explanation not involving x is $f(\tau)$ and $f(\phi)$. These formulæ give the general results of what may be called the Deductive and Inductive syllogism. Writing a for $f(\tau)$ and c for $f(\phi)$, the synthesis—

(If x, then a) and (If not x, then c) has for its implication "a or c," and for its explanation "a and c".

Applications of the Deductive Formula are familiar to logicians. But it may be pointed out that the Inductive Formula has some analogy to the elimination involved in the Method of Agreement. In the simplest form of this method, we have two premisses, each of which contains a compound antecedent and consequent. The conjunction of the con-

stituents of the antecedent is the condition upon which one or other of the constituents of the consequent is assumed to depend. The two cases contain common as well as contrary elements. They may, therefore, be expressed—

$$\begin{aligned}&(\text{If } a \text{ and } x, \text{ then } b \text{ or } y) \text{ and } (\text{If } a \text{ and } \bar{x}, \text{ then } b \text{ or } \bar{y}),\\ &\quad = (b \text{ or } y \text{ or } \bar{a} \text{ or } \bar{x}) \text{ and } (b \text{ or } \bar{y} \text{ or } \bar{a} \text{ or } x),\\ &\quad = b \text{ or } \bar{a} \text{ or } (y \text{ and } x) \text{ or } (\bar{y} \text{ and } \bar{x}).\end{aligned}$$

Here the alternant or explanation, obtained under the postulate of independence as regards x, is "b or $\bar{a}$, *i.e.*, "If a then b".

§ 9. *Reduction of Propositional Complexes to Alternant or to Determinant Form.* The two forms of the Rule of Distribution, *viz.*:—

$$\begin{aligned}x \text{ and } (y \text{ or } z) &= (x \text{ and } y) \text{ or } (x \text{ and } z),\\ x \text{ or } (y \text{ and } z) &= (x \text{ or } y) \text{ and } (x \text{ or } z),\end{aligned}$$

should be compared with the Algebraical rule—

$$x \times (y + z) = (x \times y) + (x \times z).$$

The application of this latter enables us to reduce any expression from factor-form to term-form by a direct process, *but not conversely.* In Logic, on the other hand, we may use precisely the same direct process to reduce any complex either (1) from determinant-form to alternant-form, or (2) from alternant-form to determinant-form. Boole's scheme—in which *and* is denoted by $\times$, and *or* by $+$—has rendered the former of these processes familiar to all symbolists. But even those symbolists who have worked out the reciprocal relation between *and* and *or*, appear to me to be rather hampered in applying this rule of Distribution by their retention of Boole's symbols.[1]

The data of a logical problem are usually given as a *determinative* combination of so-called premisses. This determinative combination may be transformed into an alternative combination by the process of "multiplying out". We thus obtain the series of combinations, one or other of which must hold under the given conditions. Even this problem Jevons preferred to solve by an *indirect* method. In the converse problem, an alternative combination has to be transformed into a determinative combination. This second problem

[1] Arithmetical symbols might be used by those unfamiliar with Logical processes in the following way: When required to reduce to alternant-form, denote *and* by $\times$ and *or* by $+$; when required to reduce to determinant-form, denote *or* by $\times$ and *and* by $+$.

Jevons called the *Inverse Problem*, and he held that it could be solved only by a succession of guesses. In reality, however, it requires only the same direct process as the first: *viz.*, the process of "multiplying out". Thus let the original combination be :—

$$\begin{aligned}&(\text{If } \bar{x} \text{ then } c) \text{ and } (\text{If } x \text{ then } a),\\ &= (x \text{ or } c) \text{ and } (\bar{x} \text{ or } a).\end{aligned}$$

Putting here $\times$ for *and*, $+$ for *or*, and multiplying out, we obtain after simplification :—

$$(x \text{ and } a) \text{ or } (\bar{x} \text{ and } c).$$

This is the transformation from determinative to alternative form. To transform back, we put $\times$ for *or*, $+$ for *and*, and multiplying out, we obtain again after simplification :—

$$(x \text{ or } c) \text{ and } (\bar{x} \text{ or } a).$$

The equivalence of these two forms—which we have obtained by applying the Rules of Distribution—is of great importance. It illustrates the formula :—

$$f(x) = \left\{ x \text{ and } f(\tau) \right\} \text{ or } \left\{ \bar{x} \text{ and } f(\phi) \right\}$$

$$f(x) = \left\{ x \text{ or } f(\phi) \right\} \text{ and } \left\{ \bar{x} \text{ or } f(\tau) \right\}$$

where $f(\tau), f(\phi)$ have taken the place of a and c respectively. The equivalence in question will form the basis of the method of the next article.

We see now that the dual form of the Rule of Distribution enables us to pass from a determinative to an alternative combination and *conversely*, by a direct process of the nature of *multiplying out*. And thus Jevons's so-called *Inverse Problem*, however complex, may be solved by a straightforward procedure.[1]

§ 10. *Proposed Notation for the General Solution of Logical Problems.* The process of "multiplying out," suggested in the last section, would be long and tedious. A very simple plan of notation will enable us to solve logical problems of

[1] Jevons believed that this problem was the basis of Inductive procedure. But the results obtained by it are neither more *general* nor more *conjectural* than the data. In fact, the series of propositions derived are the *determinants*, *i.e.*, the *de*ductively implied conclusions from the data. They are not alternants or hypothetically adopted explanations. The relation between the Inverse Problem and Induction appears, therefore, to break down at every point.

the kind contemplated almost at a glance. The plan I propose is the following :—

Represent and *by horizontal juxtaposition, and* or *by vertical juxtaposition.*

In this method a bar—drawn horizontally or vertically—will serve the purposes of a bracket where necessary. But in this case Jevons's plan of writing *large* and *small* letters for contradictories may conveniently be adopted.[1] The main formulæ would now appear as follows :—

$$A \left| \begin{matrix} B \\ b \end{matrix} = A \quad ; \quad \frac{A}{Bb} = A. \right.$$

$$A \left| \begin{matrix} B \\ C \end{matrix} = \frac{AB}{AC} ; \quad \frac{A}{BC} = \frac{A}{B} \right| \frac{A}{C}.$$

The application of this last (the Distributive) Rule gives :—

$$\frac{AB}{CD} = \frac{A}{C} \left| \frac{B}{D} \right| \frac{A}{D} \left| \frac{B}{C}. \right.$$

Hence, in general, we should have to distinguish the two forms :—

$$\frac{AB}{CD} \text{ and } \frac{A}{C} \left| \frac{B}{D}. \right.$$

Of these the former contains the latter as a determinant.[2] But, *if contradictories are placed in a pair of diagonally opposite corners,* the horizontal or vertical bar may be omitted. Thus :—

$$\begin{matrix} X & A \\ C & x \end{matrix}$$

is a combination that may be read either in alternants or in determinants. For :—

(X and A) or (C and x) = (X or C) and (A or x),

according to the result of the preceding section.

By adopting the plan of placing successive letter-symbols

[1] A more suggestive plan would be to print the letters *upright* or *horizontally,* according as they denote any proposition or its contradictory. On this plan, the contradictory of any complex would be found by the simple expedient of *turning the paper through a right-angle,* so that every *and* would become *or* and conversely, while every constituent proposition would be replaced by its contradictory.

[2] In words : Of two combinations involving the same modes of synthesis of the same constituents, that one is the more determinate in which the *determinative synthesis is internal* to the alternative. This is one of the most important generalisations of the calculus.

in opposite corners, we may solve the *Inverse Problem* with surprising ease. The method of solution closely resembles the third of those adopted by Dr. Keynes [*Formal Logic*, p. 438], and it was this that suggested mine. I will, therefore, illustrate by taking Dr. Keynes's three examples, which are the following :—

I.
$$\begin{array}{l} \overline{\mathrm{ABC}} \\ \overline{\mathrm{A}bc} \\ \overline{a\mathrm{BC}} \\ \overline{ab\mathrm{C}} \end{array} = \begin{array}{l} \overline{\mathrm{BC}} \\ \overline{a\mathrm{C}} \\ \overline{\mathrm{A}bc} \end{array} = \begin{array}{c|c} \mathrm{C} & \mathrm{B} \\ \hline \mathrm{A}b & a \\ & c \end{array}$$

Here the columns or determinants may be read off :—

(C or Ab) and (B or a or c) = (If c, then Ab) and (If AC, then B).

II.
$$\begin{array}{l} \overline{\mathrm{AC}e} \\ \overline{a\mathrm{BC}e} \\ \overline{a\mathrm{B}cd\mathrm{E}} \\ \overline{ab\mathrm{C}e} \\ \overline{abc\mathrm{E}} \end{array} = \begin{array}{l} \overline{\mathrm{C}e} \\ \overline{abc\mathrm{E}} \\ \overline{acd\mathrm{E}} \end{array} = \begin{array}{c|c|c} \mathrm{C} & & e \\ \hline a\,\mathrm{E} & \begin{array}{c} b \\ \hline d \end{array} & c \end{array}$$

This is read : (If c, then a E) and (If BD, then C), and (If C, then e).

III.
$$\begin{array}{l} \overline{\mathrm{ABC}} \\ \overline{\mathrm{BC}d} \\ \overline{a\mathrm{B}c} \\ \overline{\mathrm{B}cd} \\ \overline{\mathrm{A}b\mathrm{D}} \\ \overline{ab\mathrm{C}d} \end{array} = \begin{array}{c|c|c|c} & & \mathrm{C} & \mathrm{A} \\ & \mathrm{B} & \overline{a} & \overline{\mathrm{D}} \\ & & \overline{d} & c \\ \hline \mathrm{A} & \mathrm{D} & b & \\ \hline \mathrm{C}d & a & & \end{array}$$

That is : (If ab, then Cd), and (If bd, then a), and (If ABD, then C), and (If BCd, then A).[1]

The notation thus explained enables us to solve any problems in a simple manner. The expression in its final form may be read equally well in columns or in rows, *i.e.*, as a determinative or as an alternative synthesis. Of course, a precisely similar process may be used, if we started with determinatively given or mixed data.

[1] In this last problem, we first place B and b opposite ; then for the B alternants, we place C and c opposite, and for the b alternants A and a. To get the simplest result, we should aim at dividing the columns into as equal divisions as possible.

The notation partially answers the purpose of diagrammatic representation. It is, in fact, a sort of cross between Jevons's "Logical Alphabet" and Dr. Venn's "Departmental Diagrams". For the departments laterally adjacent to any letter represent the divisions of the corresponding class which are left standing. Hence the notation combines in one scheme an analytical and a geometrical solution of logical problems.

§ 11. *The Synthesis of Singly-quantified Propositions.* When a proposition is analysed into subject and predication, we represent the synthesis of propositions containing *any the same subject* by a corresponding synthesis of predications. The rules, therefore, for the transformation of *propositions* may be applied to transform the *predications* of any individual subject.

Adopting now the notation of my preceding article, we write $p \,.\, q$ for *p and q*; $p \cdot q$ for *p or q*. Further, we abbreviate the universal and particular quantifications (Every m) and (Some m) respectively by writing :—

$$m_1 \,.\, m_2 \,.\, m_3 \,.\, . \,.\, . \;=\; \dot{m}\,; \quad m_1 \cdot m_2 \cdot m_3 \cdot . \cdot . \;=\; \dot{m}.$$

Hence, by the associative and commutative laws :—

$$(1)\ \dot{m}p \,.\, \dot{m}q = \dot{m}\,(p \,.\, q). \quad (2)\ \dot{m}p \cdot \dot{m}q = \dot{m}\,(p \cdot q).$$

In words: (1) *Universals* may be *determinatively* compounded or resolved by determinatively compounding or resolving their predications; (2) *Particulars* may be *alternatively* compounded or resolved by alternatively compounding or resolving their predications.

Hence, by the law of dichotomy :—

$$\dot{m}p = \dot{m}\,(p \cdot q) \,.\, \dot{m}\,(p \cdot \bar{q})\,; \quad \dot{m}q = \dot{m}\,(p \cdot q) \,.\, \dot{m}\,(\bar{p} \cdot q).$$
$$\dot{m}p = \dot{m}\,(p \,.\, q) \cdot \dot{m}\,(p \,.\, \bar{q})\,; \quad \dot{m}q = \dot{m}\,(p \,.\, q) \cdot \dot{m}\,(\bar{p} \,.\, q).$$

Observing here that the universals $\dot{m}p$ and $\dot{m}q$ contain the common determinant $\dot{m}\,(p \cdot q)$, and that the particulars $\dot{m}p$ and $\dot{m}q$ contain the common alternant $\dot{m}\,(p \,.\, q)$, we have, by the rule of distribution :—

$$(3)\quad \dot{m}p \cdot \dot{m}q = \dot{m}\ \ (p \cdot q) \,.\, \left\{\dot{m}\,(p \cdot \bar{q}) \cdot \dot{m}\,(\bar{p} \cdot q)\right\}$$

$$(4)\quad \dot{m}p \,.\, \dot{m}q = \ \dot{m}\ \ (p \,.\, q) \cdot \left\{\dot{m}\,(p \,.\, \bar{q}) \,.\, \dot{m}\,(\bar{p} \,.\, q)\right\}$$

In words: (3) The alternative combination of universals is more determinate than the universal obtained by alternatively combining the predications; (4) The determinative

combination of particulars is less determinate than the particular obtained by determinatively combining the predications.[1]

Observing, further, that the alternant $\dot{m}\ (p\,.\,\bar{q})$ contained in $\dot{m}p$ contradicts the determinant $\dot{m}\ (\bar{p}\cdot q)$ contained in $\dot{m}q$, it follows that—

$$(5)\ \dot{m}p\,.\,\dot{m}q = \dot{m}\ (p\,.\,q)\,.\,\dot{m}q.$$

$$(6)\ \dot{m}q\cdot\dot{m}p = \dot{m}\ (p\cdot q)\cdot\dot{m}p.$$

In words: (1) and (5) The predication of a universal may be determinatively combined with the predication of any co-determinant; (2) and (6) The predication of a particular may be alternatively combined with the predication of any co-alternant.

§ 12. *Synthesis of Multiply-quantified Propositions.* In multiply-quantified propositions, the *external* quantification must be regarded primarily as quantified subject, and all that is *internal* to it as the predication for that subject. If this principle is clearly grasped, it will easily be seen that the rules for the synthesis of multiply-quantified propositions follow immediately from those for the synthesis of singly-quantified propositions. *E.g.*:—

$$\dot{m}\dot{n}\ p_{mn}\ .\ \dot{m}\dot{n}\ q_{mn} = \dot{m}\ (\dot{n}p_{mn}\ .\ \dot{n}q_{mn}\ ) \text{ by (1).}$$

$$= \dot{m}\left\{\dot{n}\ (p\,.\,q)_{mn}\ .\ \dot{n}q_{mn}\right\} \text{ by (5).}$$

The only application of this principle that requires special notice is that from such equivalences as—

$$(1)\ \dot{m}p_m\,.\,\dot{m}q_m = \dot{m}\ (p\,.\,q)_m.$$

$$(4)\ \dot{m}p_m\cdot\dot{m}q_m = \ .\ .\ .\ \dot{m}\ (p\cdot q)_m,$$

we may deduce the rules for the *commutation of quantifications, viz.*:—

$$(A)\ \dot{m}\dot{n}\ p_{mn} = \dot{n}\dot{m}\ p_{mn},$$

$$(B)\ \dot{n}\dot{m}\ p_{mn} = \ .\ .\ .\ \dot{m}\dot{n}\ p_{mn}.$$

In words: (A) Similar quantifications may be commuted; (B) The internal quantification has potency over the external.

Besides these rules, the following obvious, but important, observations must be added: I. A quantified symbol attached

[1] These rules illustrate the principle: Internal synthesis has potency over external synthesis. [See note, p. 355.]

to a molecular proposition that does not contain that symbol as suffix may be omitted; thus $\dot{m}p_n = p_n$. Hence II. A quantified symbol may be transferred across any determinant or alternant that does not contain that symbol, *e.g.* :—

$$\dot{m}\dot{n}\ (b_m . k_{mn}\ ) = \dot{m}\ (b_m . \dot{n}k_{mn}\ ).$$

Now two subject-symbols may be called *independent* of one another if they are not connected directly or mediately in the moleculars : thus, in the synthesis $p_{xy} \cdot q_{yz}$, x is directly connected with y and (through y) it is mediately connected with z. Hence x, y, z are here *not* independent subject-symbols. But in the synthesis $p_{xy} \cdot q_y \cdot r_s$, s is independent of x, y, z. This leads to a third observation, *viz.* : III. The order of externality amongst independent quantifications is indifferent. Thus :—

$$\dot{n}\dot{m}\ (p_m \cdot q_n\ ) = \dot{n}\ (q_n \cdot \dot{m}p_m\ ) = \dot{n}q_n \cdot \dot{m}p_m = \dot{m}\dot{n}\ (p_m \cdot q_n\ ).$$

IV. Conversely, then, propositions expressed in independent subject-symbols may be at once synthesised into a single proposition. Thus :—

$$\dot{m}\ \dot{x}\ \dot{u}\ [p]\ .\ \dot{n}\ \dot{v}\ \dot{z}\ [q] = \dot{m}\ \dot{x}\ \dot{u}\ \dot{n}\ \dot{v}\ \dot{z}\ [p\ .\ q]$$
$$= \dot{m}\ \dot{n}\ \dot{v}\ \dot{z}\ \dot{x}\ \dot{u}\ [p\ .\ q],$$

where p and q are any complexes involving the subjects, m, x, u and n, v, z respectively. In such a combination, we may arrange the quantifications of one group in any order amongst those of an independent group, but we must not disarrange the quantifications of the separate propositions synthesised.

The simplest example of this procedure is in the determinative combination of a universal and particular. *E.g.*, given the synthesis $\dot{m}p_m . \dot{n}q_n = \dot{m}\dot{n} \cdot (p_m . q_n)$. If now m and n—though explicitly different symbols—really refer to the same universe, we may drop the internal and universally quantified symbol $\dot{n}$, and replace it by m, so that we have $\dot{m}\ (p\ .\ q)_m$ as a determinant. This method will be required in the next section.

§ 13. *Method for Selecting Determinants or Alternants.* It has been explained that the general aim in selecting determinants or alternants is to find the most determinate determinant or the most indeterminate alternant of some assigned description. In solving such problems, the following simple rule has to be adopted : Before dropping any determinants, internalise every determinative synthesis ; and

before dropping any alternants, internalise every alternative synthesis.[1]

The explanation of this rule in detail will require us to take up the three following problems in the order of their complexity: I. The synthesis of unanalysed propositions; II. The synthesis of singly-quantified propositions; III. The synthesis of multiply-quantified propositions.

I shall refer only to the selection of *determinants*. The principles for the selection of alternants may be derived from those for the selection of determinants by simply interchanging the terms determinative and alternative, universal and particular.

I. *The Selection of a Determinant from a Synthesis of Unanalysed Propositions.* Following the rule—"Internalise every determinative synthesis," we must begin by (1) expressing the propositional synthesis *in a series of propositional alternants.* Thus :—

$$\left\{ (p \text{ and } x) \text{ or } (q \text{ and } y) \right\} \text{ and } \left\{ (c \text{ and } \bar{x}) \text{ or } z \right\}$$

becomes

$$(p \text{ and } x \text{ and } z) \text{ or } (q \text{ and } y \text{ and } z) \text{ or } (q \text{ and } c \text{ and } \bar{x} \text{ and } y)$$

according to the rule of distribution. [We may here introduce any simplifications that leave the determinative synthesis internal to the alternative.] A determinant of the whole complex may now be found by (2) *taking a determinant from every alternant.*[2] Thus :—

$$p \text{ or } (q \text{ and } y) \text{ or } (q \text{ and } c \text{ and } y) = p \text{ or } (q \text{ and } y)$$

is the determinant from which x and z have been eliminated. The rule is a direct corollary from the Rule of Distribution (writing $\times$ for *or*, and $+$ for *and*). To obtain the most determinate determinant from a synthesis of unanalysed propositions, it is, therefore, only necessary to remember to express the synthesis in *alternants* before dropping the determinants not needed.

II. *The Selection of a Determinant from the Synthesis of Singly-quantified Propositions.* Here, as before, we first internalise every determinative synthesis, by expressing the propositional synthesis in a series of propositional alternants.

[1] In accordance with the principle that *internal synthesis has potency over external.*

[2] This rule is equivalent to that given by Dr. Mitchell. [*J. H. S. Studies*, p. 80.]

Now each alternant will involve determinants, which may be *universal* or *particular* propositions. Now in these alternants we have again to internalise the determinative syntheses as far as possible. That is: In each alternant, combine determinatively the predications of every *universal* determinant with those of each co-determinant (in accordance with formulæ (1) and (5) of § 11). The remaining processes are merely a repetition of the two processes of I., working with predications instead of with propositions.

For example :—

(Every m is p, or Some m is q), and (No m is q, or Every m is s).

This must *first* be expressed in alternants ; thus :—

(Every m is p, and Every m is $\bar{q}$), or (Some m is q, and Every m is s).

Secondly, we must combine the predications determinatively ; thus :—

$$(\text{Every } m \text{ is } p \text{ and } \bar{q}) \text{ or } \left\{(\text{Some } m \text{ is } q \text{ and } s) \text{ and Every } m \text{ is } s\right\}.$$

Thirdly, supposing the letters p, q, s to stand for complex predications, we must express the predications of the above propositions in *alternants*. And—

Fourthly, we must select the appropriate determinants from each alternant last formed.

III. *The Selection of a Determinant from the Synthesis of Multiply-quantified Propositions.* Here, as before, the first step is to express the propositional synthesis in a series of propositional alternants. Each alternant may then be considered separately, as a determinative synthesis of variously quantified propositions. Of the various ways in which these propositions may be synthesised into a single proposition, we must choose according to the following principle : *viz.*, so that the particular quantifications are, as far as possible, external to the universal.[1] *E.g.*, consider the synthesis :—

$$\dot{m}\ \dot{x}\ \dot{u}\ [p] \textit{ and } \dot{n}\ \dot{v}\ \dot{z}\ [q],$$

where p is a complex of moleculars involving m, x, u, and q a complex of moleculars involving n, v, z. In synthesising here, we must first place the particular $\dot{m}$ externally to the universal $\dot{n}$. Having done so, we have the choice of placing

[1] According to the rule—"*Internalise every determinative synthesis*".

$\dot{u}$ externally to $\dot{n}$, or of placing $\dot{v}$ externally to $\dot{x}$. The above synthesis gives then :—

$$\dot{m}\,\dot{x}\,\dot{u}\,\dot{n}\,\dot{v}\,\dot{z}\;[p\,.\,q] = \dot{m}\,\dot{n}\,\dot{v}\,\dot{z}\,\dot{x}\,\dot{u}\;[p\,.\,q].$$

These two forms are at present equivalent, because the symbols m, x, u are independent of n, v, z.

Now the chief consideration required for our present problem is that *different* subject-symbols have often to be used to refer to *the same* universe or category of subjects. Suppose, then, in the given problem m and z really refer to the same universe, although they are explicitly different symbols. In such a case a determinant may always be found by the following rule :—

Of the two equivalent subject-symbols, the *internal* one may be dropped as a quantified subject, if it is *universally quantified*, and may be replaced as a suffix by the other equivalent subject-symbol.

For a universally quantified term may be transferred *externally* until it merges with its equivalent. In the given problem, then, we may drop the quantification $\dot{z}$, and replace the suffix z by m. We thus obtain the two determinants :—

$$\dot{m}\,\dot{x}\,\dot{u}\,\dot{n}\,\dot{v}\;[p\,.\,q]\;.\;\dot{m}\,\dot{n}\,\dot{v}\,\dot{x}\,\dot{u}\;[p\,.\,q],$$

where z has been replaced by m in the complex q. We have now *internalised* the predications p and q as determinatively as possible. Finally, we must make our selection of determinants from the *entire synthesis* :—

$$\dot{m}\,\dot{x}\,\dot{u}\;[p]\;.\;\dot{n}\,\dot{v}\,\dot{m}\;[q]\;.\;\dot{m}\,\dot{x}\,\dot{u}\,\dot{n}\,\dot{v}\;[p\,.\,q]\;.\;\dot{m}\,\dot{n}\,\dot{v}\,\dot{x}\,\dot{u}\;[p\,.\,q].$$

IV.—THE FIELD OF ÆSTHETICS PSYCHOLOGICALLY CONSIDERED. I.

By H. R. Marshall.

§ 1. Æsthetics may be looked upon as a special branch of the broader Science of Hedonics, and must be so viewed, it appears to me, if we are to make satisfactory progress in the psychological treatment of its problems.

If this be true, the Pleasure-Pain theory which I have advanced (see Mind, 56, 63, and 64) should find corroboration in the phenomena which we call Æsthetic, and the theory in its turn should aid us in grasping Æsthetic principles.

It is probable that some of my readers will be unable to accept as self-evident my position that the essential characteristic in Æsthetics is to be found in the hedonic effect produced by the work of Art,[1] and therefore before I can make use of the corroborative evidence or attempt to indicate the Æsthetic principles to which the theory seems to lead it is necessary to ask these readers to review the steps which lead me to take this view.

It must be stated here that I shall, in what follows, use the words Art and Æsthetics in a very wide sense.

Any device of man which serves to produce in any one an Æsthetic thrill I shall not hesitate to call a work of Art. When a man is experiencing or has experienced an Æsthetic feeling must be judged by his statement which cannot be questioned or by some less distinct expression. We must allow that that object has wrought an Æsthetic effect which has produced on general lines the same individual or racial expression that we accept as evidence of Æsthetic enjoyment in ourselves and our own friends with whom we sympathise fully. I think this wide use of terms will be justified in what follows.

Comparatively few people in our day, even among those who claim wide cultivation, realise how much of human

[1] This consideration of the effect upon the observer is too often obscured by failure to separate it from the problem concerning the impulse which leads to Art production, which is on its face an entirely different matter.

thought has been given in the past to the philosophic consideration of Æsthetics, although the special student of Art theory soon becomes impressed with this fact; for turn whither he will, he finds his way blocked by the ruins of systems which obstruct and obscure his path. That we have reached very little satisfactory result is indeed true, and this fact, no doubt, explains the existing inappreciation of the importance of Æsthetic Philosophy itself and accounts for the small general interest which is taken in the work of the past in this direction.

However tedious the labour be, the student of to-day who hopes to advance must necessarily endeavour to gain a comprehensive view of what has been done in the past. Our relatively modern methods of written record have given to the thought of the past few centuries a retentiveness which makes it for us a didactic entity, and the historical method therefore has in these days become of primary importance. The student of Æsthetic theory finds his work long and laborious, and after it all, must admit, I think, on the whole, that Æsthetic Psychology has gained little of fundamental importance from the discussions by philosophers in the past. This is by no means because Æsthetic problems have been left unconsidered by the best thinkers; rather because they have looked upon them for the most part as secondary issues; issues of moment, truly, but subordinate to systemisation which from other points of view had become of predominant importance.

It is because of this subordination that we find on every side presentations of eminently partial views. In some cases these are held as valid, and made the basis of unsatisfactory dogmatism. In other cases we find the discussion carried forward on lines so narrow that the student becomes doubtful how far the writer has intended to claim his principles as fundamental. Note, for instance, the Cartesian treatment of beauty which limits its range to elements of sight pleasure; and the notion of Aristotle as to the relation of Imitation to Art, to which we refer below: views of masters these are indeed; but views which we are unable to take seriously, now-a-days.

It happens thus that our study brings the masters of thought before us in most cases as "prophets," in the old Scriptural sense, rather than as scientific teachers. They furnish us with inspiration for our work and with data of value drawn from their own experience; of more value indeed, for the most part, than the theories which they propound. On the other hand, we find in many cases men of less im-

portance in the world of thought touching special problems of psychologic æsthetics in more satisfactory manner than the well-recognised master.[1]

It seems to me clear that Non-hedonistic Æsthetic theories have, from a psychological point of view, resulted in failure.

In the section which follows this I attempt to show the lines on which these non-hedonistic theories have developed and the directions in which they fail.

This section may be passed over without break in the argument by any reader who will allow the points contained in the paragraphs with which the third section opens.

§ 2. The earliest definite thought centres around objects which attract attention : nor is this objective reference exclusively a characteristic of crude thinking ; it is natural for any one whose point of view is cosmological rather than psychological. We should expect, therefore, to find early writers, and in later times men for whom the world of objects is specially important, examining the beautiful object itself for some quality or qualities which must be present if it is to appear beautiful ; qualities which will account for the effect produced by its contemplation.

Aristotle's Æsthetic theory had evidently a strong objective bent. Although he held that one of the ends for which the artist worked was the giving of pleasure, this pleasure was to be given by the imitation of beautiful objects, and in these he thought he had found certain distinctly objective qualities upon which beauty depended ; — such as Order, Symmetry, a certain Magnitude.

Only fragments of his Art theory, however, seem to have come down to us, and what we have is so evidently incomplete that it can only be referred to illustratively.

His principle of Imitation, for instance, casts out of the Æsthetic field most of music and practically all of architecture, and his demand for Symmetry excludes much which all the world now-a-days agrees to call æsthetic.

Tendencies to objectivism appear in the æsthetic work of many later writers of the highest authority, *e.g.*, Herbart and

[1] The Æsthetic hedonist does not need to look far for the psychologic explanation of this fact, for it is well recognised that the psychosis of thought is not strong in pleasure-pain elements ; men whose lives are given to thought and who *write* of thought must expect to lose in themselves all predominance of Pleasure and Pain in direct connexion with the subject-matter of their writing ; and if pleasure be of the essence of æsthetics it is but natural that æsthetic problems should be given a secondary place by such writers.

his followers, and in that of men of less weight from the psychologists' standpoint. Edmund Burke, who has given us a work on the Sublime which is valuable in many directions, shows this tendency. He gives us a set of objective qualities as necessary to beauty, which are manifestly inadequate to cover the ground.[1] The thought of Hogarth as an active art worker in a certain line is worthy of consideration as expressing a *natural*, although superficial, solution of the Æsthetic problem. His six elements of beauty,[2] very different from Burke's, are equally incomprehensive.

This special method of procedure has not often been seriously carried out, however, and doubtless because the difficulties which appear soon became overwhelming. The indefinite variety of those objects which are looked upon as beautiful makes hopeless the task of enumerating objective qualities which shall cover all the ground.

Plato's ideas were emphatically objective, and, notwithstanding assertions to the contrary, modern Idealism itself has never been able to shake off this objectiveness so far as æsthetics is concerned. In presenting to us Ideals, Universals, Absolutes, as fixed æsthetic standards, it has in this very fact taken an objective attitude.[3] The value of modern Idealism in its bearing upon philosophic questions being granted, we must admit, I think, that psychologic æsthetics gains very little from it. So far as its tenets are not covered in what we shall discuss in what follows it gives us little in this direction which is not psychologic mysticism. It has had much to say concerning æsthetics, but largely to force it into line with some preconceived metaphysical system or to make it fill some gap which otherwise would leave the thought sequence incomplete.[4] The relation of the Universal to the Particular; of the Idea to its objective realisation; of the Absolute to the Finite, have been made to account for æsthetic effects in many different ways, but without leaving us any help in deciding why objects are beautiful or which of divergent standards must be accepted. This last question presents the great stumbling-block to the accept-

[1] Smallness of size — Smoothness — Gradual variation of outline—Delicacy—Brightness—Purity and softness of colour.

[2] Fitness to some design—Variety—Uniformity—Regularity or Symmetry—Simplicity—Intricacy—Quantity.

[3] Even those who turn away from an objective search would be likely to say that the æsthetic psychosis implied an objective content, but not even here are thinkers agreed; Schleiermacher seems to hold the productive faculty alone to be essential in Æsthetics.

[4] Kant's treatment under Quantity, Quality, Relativity, Modality.

ance of *any* form of Universal Idealism or Absolutism, so far as Æsthetic standard is concerned; for if there be an absolute Ideal Beauty, a Universal Beauty, why should any one differ radically from me as to whether an object before us is æsthetic or not? Or again, why should my own change of mental attitude make me think that beautiful now, which some years ago I thought worthless? Perhaps my reader will say, with Lotze, that development of capacity for the apprehension of this Ideal is necessary; that if he thinks the object before us is beautiful and I do not, it shows that my capacity to grasp the Ideal is more limited than his own. But suppose before us an object which you call æsthetic, and which is not merely negatively indifferent to me, but positively ugly—disagreeable to me; although I may perhaps be able to look back to a time when it was æsthetic for me also. It is not that I find it unæsthetic, but utterly the reverse of æsthetic; that is, it is quite *opposed* to my standard, while it is in accord with yours; the standards, therefore, cannot differ by mere limitation, but are radically contradictory. Bergman[1] suggests the ingenious hypothesis that the difference lies in actual difference of object grasped; that you and I *think* we grasp the same thing, but really do not. That the Ideals do not differ, but that we are incorrectly comparing different Ideals. If this position be accepted, we must, so far as I can see, acknowledge all taste as equally authoritative in the positing of a standard, and this takes away the very basis of the Idealistic position here discussed. Perhaps it might be maintained that, notwithstanding this diversity of the appreciation of beauty, the criterion of Universality is valid, by claiming that that is called beautiful which we *think* of as Universal, however far that Universality may be from being a fact. Such argument, however, will not hold, for in most cases we are aware fully of the existence of diverse views as to the object which is beautiful for us, and notwithstanding this, our feeling is distinct and clear and is not in its essence changed by any consideration of the fact that others differ from us in their judgment.

Mr. Begg,[2] who approaches the subject from an intuitionist's standpoint, takes a distinct objective position, and acutely suggests that diversity of standard does not argue against the objectiveness of beauty but in favour of its universal distribution. Different people differ in their capacity

[1] Bergman, *Ueber das Schöne*, pp. 168 ff.

[2] W. Proudfoot Begg, *The Development of Taste and other Studies in Æsthetics*, chap. viii.

to perceive the beauty in some special object, but it is there for all that, if one single person sees it. He who considers the object ugly is so constituted that he is affected by other qualities in the object than its beauty, and these latter draw his thought away to special ugliness.

Such a position, however, if I understand it, can be maintained only by one who has not yet seen the force of the modern criticism of "faculty psychology". The argument in favour of beauty as a manifestation of an objective universality is weakened by the lack of any clear separation of the character of universality from the non-æsthetic. I, for my part, cannot agree that the merely agreeable is not often recognised as non-individual. What others call pleasure, people as a rule are very ready to class as agreeable, while they are not at all ready to allow an objective impression to be beautiful unless they delight in it themselves. On the other hand, I cannot feel that the æsthetic thrill is any less egoistic than the most purely individual sense gratification. Truly the work of art is realised as giving pleasure to others as well as ourselves, and this knowledge of sympathy adds keenly to our enjoyment, but mere universality does not raise a pleasure into the æsthetic field, for were this so, many of those pleasures which we call the very lowest would be of the very highest æsthetic value, and much that we hold to be best would be cut out of the field by the smallness of the number who rejoice with us. It is patent to all that the world of the artist who is in advance is small, and yet we cannot on any acceptation of terms say that his work is on that account unæsthetic. If we gain little else from the study of these systems, one fact is brought to our notice which is of considerable psychologic importance, and to which we shall return, namely, that these thinkers find their æsthetic field not only wide but relatively permanent; were it not so, introspection would so clearly deny the conceptions of Universality and Absolutism that they could not be defended.

Let us now turn to the subjective view of the Æsthetic Field.

Could we go back to the days of the "Faculty Psychologists" our task were simple, for then we, with Shaftesbury and Hutcheson, might satisfy ourselves by the assumption of a special internal sense for the perception of beauty; modern psychology, however, compels us to discard this and all kindred views.

Earlier thought of an introspective character, whatever be its direction, tends to lay especial stress upon (*a*) Sen-

sualism. We see this to-day in the careful work of our painstaking psycho-physicists and in the thought of those whom they influence: in fact, we all find it difficult to avoid over-emphasis of the importance of sense-organ products. The study of the beautiful from its introspective side has not infrequently shown this same over-emphasis.[1] The very term Æsthetics in its derivation has a *sense* connotation: Baumgarten first used it because he looked upon the beautiful as the perfection of Sensuous knowledge, and Kant's "Transcendental *Æsthetic*" treats of the *a priori* principles of *Sense*. Perhaps the most thorough-going statement of the Sensualistic position is given in our own time by Mr. Grant Allen in his *Physiological Æsthetics*, but he himself has apparently lost faith in his own work[2] in this special direction, and it need not therefore be considered at length. Although the sense-impressions give the normal initiative in a vast majority of our æsthetic psychoses, it is impossible in the field of sense to obtain any satisfactory solution of æsthetic problems: and men will not accept a view so narrow; they recognise at once that the effect produced upon them by a beautiful object is wider and fuller than sense-impression.

(*b*) If the use of terms forms a basis for classification, a good deal of the theory of the past may be classed as *Emotional*, and this is true, especially among English thinkers, of whom we may mention Alison and Jas. Mill. But "Emotion" is a word of very indefinite meaning when it is made to describe the æsthetic field. It is either employed with little departure from the usage of the question-waiving "faculty psychologists," or else it represents little more than complexity of Pleasure or Pain. Emotionalism under the first signification merely restates the questions of Æsthetics, and under the second throws us back upon hedonism, which we shall presently consider.

(*c*) The most emphatic drift of thought in the direction of the Content is, and has been, towards *Intellectualism*, and naturally so. When critical examination fails to show any special intellectual product which, in width and in nature, corresponds with Æsthetic effect, there is a natural diversion of attention to the examination of the Intellectual processes

[1] Burke is quoted by Von Hartmann as a representative sensualist, but I think it more proper to class him as an Emotionalist. He defines Beauty as a "quality by which an object causes love or some passion similar to it".

[2] See MIND, No. 45.

themselves, which leads in its extreme development to (*d*) bald Rationalism.

"Harmony" of mental action (and cruder notions as to objective harmony are seldom altogether eliminated) and the process of "Unification of the Manifold" are now and again brought forward as all sufficient to account for Æsthetic result: but it is easy to show that we live in an atmosphere of harmonies and are constantly dealing with unities in manifoldness which not only have no marked æsthetic character, but ordinarily are devoid of all æsthetic character whatever, and the same argument holds against other similar principles.

Rationalism even in its crudest form takes a strong hold upon men's minds, and maintains its ground, especially among German thinkers, although often too covertly held and vaguely stated. It is easy to see, however, that no amount of argument, however conclusive its form may be, can change our notion of what is, or what is not, beautiful unless it induce an actual change in the matter which is presented to thought. No better position is gained by referring the process to sub-consciousness;—by arguing that the effect is due to recognition of relations too delicate to rise above the "threshold," but grasped, for all that, in the Æsthetic state of mind.

This is a cowardly means of covering defeat which one with no little surprise finds willingly accepted by thinkers of the highest rank to this day (*e.g.*, Helmholtz and his school), and with the best of authorities in the past to give weight to such method: for it must be remembered that Kant was only willing to give Music a position among the Arts of Beauty because of the fine mathematical relation between harmonious tones which from other investigations have been found to exist, and which he supposed to be sub-consciously grasped in the Æsthetic effects of Music.

The vaguer statements of simpler Intellectualism, which one finds so frequently, merely go to emphasise the fact that reflective thought is of the greatest importance in the Æsthetic psychosis. The best work of later writers, as we shall see in what follows, tends to give value not only to the Sensual, and the Emotional, but also to the Intellectual, as all involved in the æsthetic state, as we know it, and this is the position to which we would be led by our synthetic line of thought, if no other evidence appeared.

I do not find that the contentions of the Formalist, except so far as they are hedonistic, go far to help us psychologically. Concrete formalism fails to give us any unassail-

able criterion of the æsthetic, and abstract formalism gives us nothing more valuable, from our point of view, than a mere restatement of the fact that we must look elsewhere than to sensualism, or to the matter of the content, for the essence of the æsthetic. But so far as Formalism is hedonistic, it points, it seems to me, in the right direction. This hedonistic view will receive full discussion in what follows.

§ 3. Although the discussions which have been above reviewed are very unsatisfying, they serve to give emphasis to the fact that the field of Æsthetics is always hedonic; and this is a fact of great psychological importance. Whatever else may be said of the æsthetic mental state, its pleasurableness cannot be questioned. It is not necessary therefore to prove the hedonic connexion, and, on the other hand, I do not see how it is possible for any one to pass it over lightly. Thinkers of all grades and of all schools, from Aristotle downwards, acknowledge the necessary connexion with pleasure whatever position they take as to the value or importance of this fact.

It is not difficult indeed to find authorities, from Epicurus down, whose statements may be interpreted as decisive expressions of the view for which I argue: and some few, Fechner, for example, who distinctly base Æsthetics upon Hedonics. The average man, however, does not think of pleasurableness as a *characteristic* feature of the æsthetic unless his attention is called to it, and there is a good deal of popular disinclination to the treatment of pleasure as an element of any special importance in the æsthetic psychosis. Certain men of penetration also raise the most violent opposition to any such treatment.

The popular opposition is not difficult to understand, for the ordinary man does not learn of himself to catch the close relation between a thoughtful phase of psychic life (which in fact is seldom pleasurable to him) and the pleasure quality which may go with it; he habitually thinks of the two not only as separate but as in opposition, and when led to consider anything so complex as the identification of hedonic phase and æsthetic phenomena, he is unable to catch any relation between the laborious thought involved in the consideration, and the revivals which come to him in connexion with the word "pleasure". He is led astray, however, principally by his inability to think clearly. When he thinks of æsthetics he always busies himself with some content of art, and thus it not infrequently happens that it is difficult even to persuade him that pleasure is an ever-present result obtained from the consideration of art forms.

With the theoretic opposition it is not so easy to have patience. Von Hartmann[1] goes so far as to deny us the right to consider the hedonic quality in æsthetics as more than an accident unrelated to the essence of the Beautiful. The psychologist, however, cannot allow himself to be deterred from research in this direction by any objections determined by theoretical preconceptions, although the strong opposition deserves consideration and explanation. Hedonic the æsthetic psychosis certainly is. Whether this hedonic quality is of great moment is a question to be determined.

The Associationists in Psychology have seemed in a way to identify beauty with pleasurableness by claiming it to be the result of the association with objects of agreeable and interesting ideas. Their doctrine in this regard is difficult to treat specifically because of their failure to differentiate Pleasure from the Emotions and because of their treatment of Pleasure as though it were re-presentable, in the same sense that a Content is, rather than being a quality which may attach to a presented Content without belonging to its revival at all.

That associations which are pleasurable are important elements in an æsthetic effect I agree, as will appear later. If the doctrine be held to mean, however, that æsthetic effect is determined altogether by pleasure revivals I cannot follow, for we shall presently see how much presentative pleasures have to do with the effects of beauty.

If, on the other hand, the doctrine be meant to signify an

[1] Confer. *Æs. seit Kant*, p. 354. Von Hartmann grounds his position upon the unimportance of the objective real thing; if this be unimportant, then so also is the hedonic aspect, for, says he, we have as little right to look for the essence of the æsthetic in the effect (Gefühle) as in the cause (the object). (*Æsthetik*, p. 40.) In passing one may note that there seems here to be a hidden shifting of ground. The "cause" of which he speaks is an objective thing, that which he calls "effect" is something which psychologically has no objective significance, and which hence is not an "effect" in the same sense in which the object is the "cause": the objective universality of æsthetic pleasure, which Kant upheld, not concerning us in an analysis of the psychologic state under discussion. But apart from this point, I for one cannot with Von Hartmann see any theoretical objection to looking to the *object* for our criterion, a procedure which he considers altogether reprehensible; to the object in fact we *have* been looking in the past, and the trouble is not that the search in this direction is illegitimate, but that all our looking has brought no result. We find nothing in the object which is always there if the æsthetic quality is to present itself to the observer. We therefore turn our attention away from this object to that much of the subjective state which is not part of this object and there we do find something which is always present where æsthetic effect is produced, *viz.*, pleasure.

identity between hedonic phenomena and æsthetic phenomena we are at once met by the objection that while all Æsthetic states of mind appear to be pleasurable not all pleasurable states are allowed to pass as æsthetic. The problem which is thus brought forward is an important one which we must consider somewhat at length. It may be stated in the form of the question: What are the bounds of the æsthetic within the hedonic field?

No skill in introspective analysis is required to grasp the fact that there is a *separation* between hedonic and æsthetic: the careless thinker is the one most ready to take it for granted, and high authorities also make much of it. Sully, for instance, thinks Kant's elucidation of the separation of the Beautiful from the Good and the Agreeable one of his important achievements for Æsthetics.[1] But it appears to me that altogether too much is made of this separation. Thinkers who are our teachers have over-emphasised the separateness by drawing attention away from the *connexion* between the two fields, and it is important, I think, to take a position opposed to the usual one; to emphasise the *lack* of separateness between Hedonics and Æsthetics.

If one examine the work of art critics and the more or less philosophic and scientific writings which deal with the *facts* of Æsthetics rather than its theory, one will find little more than descriptions of pleasure-getting coupled with more or less thorough attempts to arrange this pleasure-getting in a logical way. If, on the other hand, one examine the writings of those who have expressly studied the psychology of pleasure, one finds æsthetic phenomena treated altogether as the best-recognised data of Hedonics; used to corroborate theory and to justify classification, exactly as the simplest sense-pleasures are used. Let us look at this from another point of view. Take into consideration any average complex æsthetic object; we find it a very wide one with certain elements which are emphatically pleasurable. Eliminate in thought the pleasurable elements one by one, and we find that while in the main the object does not change the mass of its Content, its æsthetic quality gradually disappears. We may acknowledge still that it has a right to be named æsthetic because of the opinions of others and because of our own judgments in the past, but for ourselves at the time it has lost all that makes it worthy of being called by so honourable a name. We are all familiar with the fact that

[1] Article "Æsthetics," *Enc. Britannica*. *Cf.* also Blencke, *Die Trennung d. Schönen v. Angenehm*, p. 3.

an object which but a moment ago was æsthetic for us may become unæsthetic by a degradation to "indifference" or painfulness of the special content which was giving us pleasure. The suggestion of a ridiculous or painful association, with some essential element in an art-complex, will for all time reduce for us the æsthetic value of the whole work. The average art critic indeed very often makes and unmakes æsthetic objects for the masses in this way.

Certainly these facts indicate a very close connexion between the Hedonic and Æsthetic fields, and one which psychologically would seem to be essential. Of course the separation so commonly made must also be acknowledged, and it is worth our while, I think, to consider the main results which have been reached by those who have attempted to mark the lines of separation with distinctness.

This review, if tedious, may be passed over, and, as before, I place it in a special section for the reader's convenience.

§ 4. If the field of æsthetics be a portion of the hedonic field, it certainly ought not to be a difficult task, one would say, in some rough way to mark off that part of the hedonic field which is æsthetic from that which is not: to differentiate the one from the other by a process of limitation of the pleasure field. This, however, does not appear at all an easy matter when one comes to attempt it. The average intelligent observer who has not given the matter especial study will be likely to say, off-hand, that the sense-pleasures at all events are excluded when we refer to the æsthetic. In the exposition of theories from a non-hedonistic point of view this position has been often taken either explicitly or less directly by the limitation of the field to non-sensorial states. Kant's separation of the Agreeable from the Beautiful indeed turns largely upon his notion that the sense-pleasures, which are essential to the former, are wanting in the latter. That æsthetic pleasure is wider than sense is not open to question, but it must be granted that we obtain well-marked æsthetic results which cannot be separated from sensation, such as we find, *e.g.*, in the impression produced by a rich colouring, and in the fulness of simple tones. We find indeed when we go to the root of the matter that it is only the so-called "lower sense" pleasures which it is desired to exclude. The inclusion of sense effects through eye and ear does not create opposition. But it seems to me that if it be admitted that one set of senses can produce æsthetic effect the whole contention fails; and a close examination shows clearly, I think, that the rest of the senses may act in the same manner in the make-up of æsthetic complexes. This

a large majority of the more capable thinkers find it necessary to acknowledge, for they do not hesitate to take the pleasures of the sense-impression into account. Nobody can complain that Lotze had leanings towards sensualism. But he says clearly in this connexion [1] that the first condition of a work of art is its power to please the senses.[2] "If we step into the shadow of the wood at height of noon," says Bergman, "the agreeable refreshment is bound up with the idea of the grandeur of the forest; the refreshing coolness belongs to that which we feel to be the beauty of the wood;" and this comes from one who lays the basis of æsthetics in contemplative thought. For my own part, I feel that the pleasurable impression of any sense may become a rich component part of an æsthetic delight.

If one follow Alison or James Mill and his school,[3] he will refer all æsthetic enjoyment to emotional association. So far as this theory is separable from pure hedonism it is doubtless based upon introspective examination, which for certain people (and to this class I belong) shows powerful elements of Emotion in many æsthetic complexes. For me, Love, Fear, Sorrow, Joy, &c., appear to be part and parcel of many an æsthetic effect. I think it clear therefore that pleasures of the typical emotions are of great moment in æsthetics, but at the same time it is equally true that they do not stand alone as the basis of æsthetic effect. "Association" by itself can of course give no account of distinctively æsthetic effect. It is a principle of important consideration in æsthetics as in all phases of mental life. It shows us the movement by which we reach the beautiful but certainly not the exclusive qualities which produce the distinctive effect.

The historically related opponents of Mill, *viz.*, Reid, Hamilton, and Stewart, all upheld a view which asserts the non-importance of Emotion in claiming overmuch for Intellect; they, however, show more or less willingness to

[1] *Outlines of Æsthetics*, § 23.

[2] The objection of the German Idealists to the consideration of sense-pleasures as of æsthetic worth is based upon theory, but it cannot be supposed that they would uphold views which contradict their experience, and we must seek later to account for so strong an opposition. There is serious objection to the limitation of the use of the word æsthetic to exclude all but the "Scheingefühle" as Von Hartmann does, in the fact that the word now covers very generally the whole ground of the Beautiful, and objective evidence shows that people generally do not accept such a limitation.

[3] J. S. Mill thought that his father had an unconscious follower in John Ruskin. (See his edition of J. Mill's *Analysis*, vol. ii. 253.)

admit the worth of other factors. Other writers go much farther (*e.g.*, Hemsterhuis, Diderot) in their restriction of the æsthetic to the intellectual activities. Kant excludes sense and depends upon reflexion. Both Emotional and Intellectual theories are weakened by failure to accept the sense-element as valuable, but apart from this, such opposed theories, although upheld by thinkers of power, are mutually destructive as arguments looking to the fixing of æsthetic differentia, on account of this very opposition. It is incredible that emotional association can be all of æsthetic enjoyment, when the experience of such men as Reid and Hamilton and Stewart could lead them to hold it unimportant; or that Intellectual activity can be all-important, when the Associationists were able practically to ignore it.

It may be well perhaps to note some late examples of the Intellectual Emphasis. Prof. G. T. Ladd, who does not by any means ignore the sensuous basis, holds (*Elements of Physiological Psychology*, p. 521) that "even most elementary æsthetic feelings cannot be considered as on a par with the sensuous feelings or as mere aggregates of such feelings. The tone of feeling which characterises the sensations furnishes a material for genuinely æsthetic feeling, but the latter always implies also the working of certain intellectual laws and a union of simple feelings of sensation under time-form and space-form." But where shall we find the space-form or time-form in the æsthetic effect produced by mere rich colouring or by the luscious tones of the human voice apartment from any movement? If we follow Prof. Ladd we are compelled to deny the æsthetic quality in such cases altogether. We refer to this theory again below. Bergman's view as to contemplation has been noted. He attempts to cover the ground of Sense and Emotion by bringing them into Intellectual categories. Sense-Beauty, Form-Beauty, "Stimmung"-Beauty; but contemplation is the basis. But, on the other hand, we have no less pretentious a thinker than Von Hartmann[1] denying that distinctly intellectual operations are even pleasurable, and stating that for himself relations of two ideas seem absolutely indifferent up to the line where the intensity of the Vorstellungen becomes so strong that pain ensues. It is interesting to note that this contention is not merely modern. It goes back to Greek speculation; Chrysippus, it will be remembered, holds as an argument against Aristotle that pure speculation is a kind of amusement.

[1] *Æs. s. Kant*, p. 289.

Many other theories have been brought forward which involve limitations, for the most part, far less narrow than in those cases which have just been considered and more often implied by over-emphasis in some special direction than upheld by specific claims: some of these deserve examination.

Reid himself finds that action of Intellect is not alone in giving æsthetic quality, but is bound up with the functioning of our moral faculty in producing the effect reached: while Hamilton, on the other hand, lays stress upon the occupation of the Imagination and Understanding in a full, free, and consequently agreeable activity. Reid shows the step (logical rather than historical) to the emphasis of the play of "Spiritual" feeling which we find in Cousin and Lévêque, in Shaftesbury and in John Ruskin, although Ruskin's æsthetic field may, perhaps, be better described as that of religious ecstasy. Hamilton, on the other hand, shows the step to the extreme emphasis of Imagination which we find in Addison. We may note also in this connexion the trend of thought of which Bergman's position already referred to is an emphatic instance, *viz.*, that the æsthetic basis is to be found in the pleasures of contemplation. But no one who takes a wider view than that of personal introspection can limit the field of æsthetics to moral or to imaginative effects, and I doubt whether any one can thus narrow his own field. He must see æsthetic effects which are non-moral, he must see others which seem to be entirely separable from the imagination; the latter view overlooks the importance of Sense and Emotional elements, which are acknowledged now-a-days to be of great moment.[1]

We cannot go farther in this examination of the effort to separate the Agreeable from the Beautiful without considering Kant's notable contention in this regard. We must not overlook, at the start, the fact that the matter of Kant's consideration was by no means identical with that before us at this moment. We inquire whether in the field of Æsthetic Impression any special Hedonic Element must be cast out. Kant was concerned with the *a priori* character of his theoretical pure judgment; and, strictly speaking, therefore, did not deal with our problem. We may, however, with profit examine his argument to see whether the

[1] The attempt to separate *Scheingefühle* from *reale Gefühle* (Von Hartmann's *Æs.*, pp. 46 ff.), although arising from metaphysical theory, probably is psychologically based upon the same personal bias which led to Addison's extreme view, and which produces the reference to contemplation.

psychological positions involved throw any light upon our closely allied inquiry. Kant's main contention was that the judgment as to Beauty had universal validity, while that concerning the Agreeable was Individualistic,[1] and this was a contention into which he was led upon theoretical rather than empirical grounds. It involved for him, in the first place, the position that sense-pleasures must be excluded from the Æsthetic. For pleasure and pain spring from (1) sense-impression, or (2) from the processes involved in the binding together of ideas: only the latter of which can be general: therefore the field of sense-impression must be individual. We, dealing with the region of Æsthetic Impression, have, I think, already seen convincing evidence that sense-pleasures cannot rightly be excluded; and it seems to me that even if it were conclusively shown that they were strictly individual, *i.e.*, incommunicable, this fact would not prove them to be valueless as elements of æsthetic *impression*. But to return to Kant's argument, his theory in this regard led him further to hold that all Interest must be lacking in the Beautiful. The Sublime he allowed to have a moral interest—for moral interests are the *only* ones which are Universal—but *Beauty* in his view has no direct relation to morality, and, as all other than moral interests are individual, Beauty to remain Universal must exclude interest. This is evidently a position reached from a purely theoretical basis, but apparently it must have had its corroboration in his own psychologic experience. Sympathetic pleasures play an important part in all art work of higher

[1] Blencke (*Trennung d. Schonen v. Angenehm*, p. 39) remarks that the evidence of the psychologic soundness of Kant's position is seen in the fact that we are content *to be pleased* ourselves, while, on the other hand, we try to communicate our judgment as to beauty to others, and such a result Kant's principles would require. But it seems to me that Blencke here goes too far. In the case of pleasures involved in the action of our own peculiar organs, we recognise the pleasures as our own to be sure, but are very ready to endeavour to bring about the same experience in our companions, by urging them to taste or touch, or listen or act as we are doing; and we only feel content that they cannot experience them when we know that they have made the trial. It is merely an extension of this sympathetic altruism which leads us to endeavour to bring out for others by explanation or description the elements of a work of art which give us full pleasure; elements which are not apparent always upon the surface, and, perhaps, dependent upon the sounding of some chord which may be struck directly or associatively by discussion and description. Here, too, when we find discussion and description failing to make the object beautiful for a companion, we come to see that we experience something which he cannot grasp. There seems to be no separation between the course of thought in the two cases.

grade. Moreover, there is probably little doubt that for Kant and a large number of men of his general mental type the most valued pleasures were and are obtained in fields of disinterested effort; that for them purely egoistic pleasure-getting always carries with it an ethical reproof which leans towards the side of pain, and that for such men disinterestedness must therefore be an essential characteristic of the subjective æsthetic field. But it seems to me quite clear that this is a matter of individual mental bias. The ordinary man who is not naturally disinterested in his action does not, I am convinced, find the presence of self-interested elements a bar to æsthetic enjoyment. The pleasurable pride of ownership surely forms an element in the æsthetic delight of many an Art collector. Personal interest enters for all of us into our judgment concerning the beauty of those whom we love, and ownership has the same effect upon the judgment of many men concerning the beauty of their possessions. To return again to Kant's position. The recognition of usefulness implies self-interestedness, directly or indirectly, and Kant therefore found it necessary to hold that the taste judgment was based upon an unpurposive purpose, an *aimless* usefulness[1] (Zweckmässigkeit ohne Zweck), that is, a usefulness of such nature that it is unrecognised as useful, and hence not followed because of the interest involved. As an element in the æsthetic impression, however, I do not think that even *recognisable* usefulness can be overlooked. It is commonly supposed to be an essential to architectural beauty, at all events, and the relation to other branches of the æsthetic is also commonly supposed to be intimate. Kant stands opposed to so great a thinker as Aristotle in this respect, and later observers, such as Adam Smith, Dugald Stewart, Kames and Hogarth, and notably Fechner, make usefulness of great importance æsthetically. Usefulness *per se* in my opinion is not of so high importance as is the absence of non-usefulness, as is indeed all avoidance of shocks, but it seems to me evident that it *is* an æsthetic *element* for most of us, and when we find it considered of moment by such an acute observer as Fechner we are compelled to regard its exclusion as impossible. Ruskin never preached a more fallacious or mischievous doctrine than when he emphasised the thought (Lamp of Sacrifice) that the useless things in structure make Architecture out of Building.

[1] Von Hartmann, *Æs. seit Kant*, p. 23, says even this comes down to objective fitness.

Schiller restates the Kantian notion by his emphasis of the "Play Impulse" in reference to Æsthetics; the modern evolutionary school as represented by Mr. Spencer takes the same position, Prof. Bain following closely. This leads Mr. Spencer to the exclusion of "life-saving functions" from the æsthetic; but what becomes of Mr. Spencer's system if *any* functions (especially pleasurable ones) are thought of as non-life-serving, directly or indirectly, I do not clearly see. Even if some functions of the so-called "higher" kind are classified as non-life-serving, to exclude all which do so serve would surely cut off a large part of our æsthetic field.

As modern psychology draws a clear distinction between receptive and motor nerve, not unnaturally do we find a corresponding psychical distinction looked for in all directions, and Grant Allen in his *Physiological Æsthetics* has attempted to identify the æsthetic with the passive, receptive pleasures. Some such view is also found implied in the theories of not a few metaphysicians, and Fechner[1] takes a strong position in this direction; Mr. Allen may therefore claim the best of company. On the other hand, however, others, Schleiermacher for example, take quite an opposite position in claiming all for the productive side of mentality. Guyau's clear criticism[2] has given the theory of Passivity so powerful a blow that no more than reference seems needful. It is well enough to emphasise the general passive nature of the pleasure involved in æsthetic appreciation as opposed to the active pleasures obtained in the creation of an art work, but this gives us no reason for the exclusion of all pleasures of action from æsthetic compounds. Our psychic life is so bound up with the active[3] side that it is impossible to cut off the active element in any psychosis. Our emotions, our desires, all relate to action, and beyond that what is added to the pleasures of an æsthetic psychosis by the elements of sympathetic activity is far from small.

It is not uninteresting to note here a very late Idealistic view which apparently makes activity all-important. Prof. Ladd in his *Introduction to Philosophy* (p. 343) marks the differentia of æsthetics thus: "Nothing that is apprehended as incapable of change of motion in time or space, and so of the successive realisation of different movements of physical

[1] *Vors. d. Æsthetik*, vol. i. 54.

[2] *Problèmes de l'esthétique contemporaine.*

[3] Horwicz holds that the æsthetic effect produced by the representation of power is due to an aroused idea (Vorstellung) of agreeable muscular action. (*Psychologische Analysen*, Th. ii. Heft 2, p. 166.)

or psychical being, appears beautiful to the human mind. But not all movement of physical or psychical being is beautiful: the movement which is beautiful must have two characteristics. It must have spontaneity, or a certain semblance of freedom; and it must use this spontaneity, as it were, in self-limitation of an idea." It is evident from the very definition that spontaneity, pure and simple, does not approve itself to Prof. Ladd as fundamental; nor can it be held, I think, that we find the phenomena of beauty in all cases where we have "spontaneous movement which uses its spontaneity in self-limitation of an idea".

The distinction between higher and lower grades of pleasure, which is so commonly met with, is by some writers, and by many talkers, made determinant of the difference between the æsthetic and the non-æsthetic. (In Kames we find a good example of this doctrine.) There is something illusory, however, about the very notion of such a distinction, for no criterion for the valuation of pleasure *quâ* pleasure appears beyond its mere intensity.[1] Our gratifications are normally taken in the lines of our natural development; in higher mental regions as we rise, or sad to say, in lower regions if we fall. The direction of growth or of deterioration determines the field of pleasure-getting, and while there is the strongest ground for belief in a constant increase in pleasure-getting capacity, *pari passu* with our mental growth, still it cannot be shown that the delights reached by the man of high moral culture bring a better *quality* of pleasure to him than the gratifications of the barbarian bring to the savage mind; nor can it be shown that the pleasure which we get when we reach a higher moral position is any better *per se* than that which we experienced before we reached it. The fact is that when we speak of the "higher pleasures" we are merely restating our problem in new terms. Those pleasures which are æsthetic are the ones we call "higher," but until we can give some definite meaning to the word "higher" in this connexion we gain nothing. In most cases those who discuss the matter from this standpoint are really dealing with ethical data. It is the man who has grown to be capable of appreciating newer ethical standards, and who has lost his pleasure in the old, who makes a dis-

[1] As Bentham tells us: "Quantity of pleasure being equal, push-pin is as good as poetry". Confer also Dr. James Ward in *Enc. Brit.*, ix. ed., Art. "Psychology," for a careful statement of the facts. Compare Fechner (*Vor. d. Æs.*, vol. i. 26), who explains what is called "higher" pleasure as characterised merely by being itself the source of new delights.

tinction between pleasures of higher and lower grade. What he has cast off as unworthy no longer gives him pleasure in contemplation and is no longer felt as æsthetic. This is not, however, because the Æsthetic has an essential ethical dependence, but because Æsthetics is founded upon Hedonics. The man has gained new fields of pleasure-getting as his character has developed: what he casts out as non-æsthetic because it is a "lower pleasure" is a pleasure merely in name, is in reality so bound up with painfulness as to be necessarily unæsthetic. This by no means shows that what was pleasurable in his undeveloped or uncultivated state was not æsthetic for him at that time, or that the pleasures of the savage are not æsthetic for him.

Not that ethical standards are unimportant in Æsthetics. Apart from the æsthetic delight, which we gain from what Aristotle calls Moral Beauty, *i.e.*, from the recognition of nobility of aim and strength of purpose, the appreciation of "æsthetic aspects of character," of "the beauty of holiness," the influence of our ethical standard upon our æsthetic field is most important; for, in the end, most thoughtful people will make their final judgments turn upon them negatively, because what is for them immoral, is painful and non-æsthetic. As we have noted above, however, the majority of our pleasures have no ethical bearings; the mass of æsthetic effects are made up of elements entirely unmoral.

The attempts to determine the bounds of the æsthetic field by a process of limitation of the hedonic appear to me to bring no satisfactory result; nor does it appear that it can be determined by the characteristic manner of presentation of the pleasures which make up the total effect. Fechner[1] suggested a criterion in the Immediacy of the pleasure-getting. Von Hartmann on the other hand thinks Fechner's position is altogether without foundation; holding that however immediate the pleasure connected with an object may be, it does not thus become æsthetic.[2] Such conflict of opinion makes this criterion unsatisfactory.

Horwicz[3] seems to hold that sensational pleasure and æsthetic pleasure differ not in substance but in that the æsthetic shows a broadening of the field. Guyau[4] follows in the same line, suggesting that the broadening of the agreeable horizon, the growth in extension of the pleasure field, is what we experience when an object appears to us to be æsthetic. This implies, as he distinctly states, that intense

[1] *Vorschule d. Æs.*, vol. i. 15.
[2] *Æs. seit Kant*, p. 354.
[3] *Psy. Analysen*, vol. ii. 168.
[4] *Problems*, pp. 75 ff.

and unextended pleasures in their very nature are unæsthetic. This does not accord with my own experience, still I shall not deny that for him a widespread thrill alone produced what he called æsthetic feeling, as may well have been the case with a man to whom sympathy was so important an element of life as it was with the writer of *L'art au point de vue sociologique*. In truth all of our notable æsthetic psychoses are summational hedonic complexes, but this fact does not show, as it is made to argue implicitly, that the pleasurable elements which make up the same are not in themselves æsthetic. I do not wish to understate the value of this width of effect in æsthetics, for I think it of very great importance.

The prominent place which Fechner gives to the Associational principle shows the importance in which he held it. All notable works of Art show it, and all persistent types of Art subject. But, on the other hand, it cannot be held that this summation *per se*, this width of field, this extensiveness, in itself is the all in all in æsthetics. To make it so forces upon us the impossible task of deciding where extension begins; compels us to look for some degree of extension on one side of which all is unæsthetic, while on the other all is æsthetic. Such a line of division, however, cannot be drawn.

(*To be continued.*)

V.—DISCUSSIONS.

THE INFLUENCE OF MUSCULAR STATES ON CONSCIOUSNESS.

By Edmund B. Delabarre.

In a recent dissertation[1] I had occasion to discuss the evidence against and in favour of the existence of sensory nerves connected with the muscles, whose function it is to indicate the different degrees of tension and contraction of these organs. The importance of this question to psychology seems to warrant the repetition in these pages, with some slight modifications and additions, of the arguments there presented. Histological investigation has as yet advanced but little toward the final solution of this problem. Physiological research is but just beginning to bring in positive results. Psychologically the strength of argument has thus far seemed to lie on the side of those who deny the existence of true muscular elements in our consciousness, for the believers in sensory elements of this kind have contented themselves more with taking them for granted than with bringing forward convincing reasons for assuming them. Such evidence in their support as can be given here will still be regarded by many as inconclusive; but it seems to me possible at least to show that the arguments against their existence are invalid, and that it is highly probable that they form a most important factor in our mental life. The latest important defence of them was that given by Bastian in the discussion in *Brain* (vol. x., 1887). Since then many plausible arguments against them have been devised. We will examine these latter first, and then see what positive evidence can be collected in favour of their existence.

1. The most natural argument, and doubtless the one which is of greatest final weight with the opposers of "muscular sensations," is that, since we have no introspective evidence of their existence, there is no reason why we should accept them. But the question of the existence of "muscular sensations" is one of secondary importance. Our chief concern is to discuss the existence of what I shall call "muscular elements" in mental states—that is, elements in the complicated physical substratum of mental states, which themselves arise from centripetal nerve-excitations aroused by contractile stimuli in the muscles. The distinction is a clear one, based on the contention by Prof. James that sensations in themselves separate can never fuse together

[1] *Ueber Bewegungsempfindungen*, 1891.

into another sensation or state of consciousness. "Atoms of feeling cannot compose higher feelings, any more than atoms of matter can compose physical things. The 'things,' for a clear-headed atomistic evolutionist, are not. Nothing is but the everlasting atoms. When grouped in a certain way, *we* name them this 'thing' or that; but the thing we name has no existence out of our mind. So of the states of mind which are supposed to be compound because they know many different things together. Since indubitably such states do exist, they must exist as single new facts, . . . independent and integral, and not compounded of psychic atoms."[1] This view helps us in answering the argument which we are discussing. A red-stimulus causes one sensation, a blue-stimulus another, the two combined a third. But the sensation of red does not combine with the sensation of blue to produce the sensation of purple. The two stimuli do, however, so act together as to produce a brain-process of a third kind, whose accompaniment is the sensation of purple. Similarly we may have no mental states which contain muscular sensations as part of their composition. But we do perhaps have a large variety of mental states into whose accompanying brain-process enter muscular elements. The nerve-processes aroused by the stimuli of muscular contraction unite with nerve-processes from other sources in the production of conscious states which are as unanalysable as a sensation of purple is, when taken by itself, unanalysable into the red and blue nerve-excitations which enter into the total physiological process.

Yet we can easily obtain separate sensations of red and of blue, and detect the resemblance of purple to both of its constituents. How then does it happen that we do not perceive the "muscular elements" as separate sensations? If self-observation does not reveal to us sensations having their source in the muscles, it is because we have never learned to localise them there. To the infant, as Prof. James (i. 496) says, "sounds, sights, touches, and pains, form probably one unanalysed bloom of confusion". Out of this confusion the slow accumulation of varied experience forces him, by means of processes which it is not necessary to analyse here, to recognise the separateness of these different sensations, and to localise them with continually increasing exactness. But the circumstances which compel him to make these modifications for the special senses do not exist in the case of excitations of the sensory nerves of muscles, joints, viscera, and other internal parts. A mental state is analysable only into such elements as can be experienced under other circumstances as separate sensations. There are many reasons why muscular sensations cannot—or can only with difficulty—be so experienced. Exploration by sight and touch, which in other cases aids and necessitates the process of localisation, is here impossible. And

[1] Wm. James, *Psychology*, vol. i. chap. vi.

furthermore another element which compelled the recognition of sights and sounds as separate sensations is wanting here—namely, the importance which this recognition has in increasing our knowledge of our environment, and thus in furthering our interests. As Helmholtz says, we must *learn* to direct the attention upon our separate sensations, and we learn this usually only for such sensations as serve as means toward acquaintance with the outer world. It is of no importance for our practical interests that we should ever distinguish a muscular sensation as such. It is of vast importance that sensory excitations from the internal organs should combine with excitations from the special senses and with their reproductions, into complexes of nervous processes whose conscious accompaniments are feelings of movement, of effort, of spatial magnitude, of emotion, of self, &c. And it is always into such introspectively analysable combinations that the muscular excitations enter. The seen movement, or the visual image of movement when not seen; the spatial distance and direction; the emotional feeling; and the other total mental impressions, are the emphatic and important thing in all cases with which contractile stimuli have to do, and hence these attract all the attention and prevent the components from being detected. When we try to analyse them, the slight intensity of the sought-for elements themselves; the fact that they are almost drowned in the mass of sensations from the skin, &c., which we have learned to recognise apart and to localise; and the absence of the aids which exist in the case of other sensations, prevent a complete and successful discrimination. Thus it is clear why the muscular elements never force themselves upon our attention separately, and why the introspective search for them is difficult. The argument under discussion is not therefore of the slightest weight as a disproof of their existence.

Yet careful consideration does seem to yield some introspective evidence. Almost every unprejudiced observer would locate a feeling of strong tension in the muscle itself. Cramp, the extreme of muscular tension, and fatigue, are very definitely located there. Careful attention to the successive changes in sensation in the different parts which are involved in the progress of a movement, seems to detect faint sensations in the various muscles. And finally Goldscheider[1] has recently shown that, if we make the skin above a muscle anæsthetic and then by means of an electric current cause the muscle to contract, we then experience a faint sensation, whose quality resembles that obtained by pressure on the muscle, and which is localised not in the skin nor in the whole moving member, but in the deeper parts.

2. A second argument urges that, even if sensory nerves were proved to exist in the muscles, they could serve only to inform

[1] *Zeitsch. f. Kl. Med.*, xv., 1889, § 109.

us in regard to the degree of *fatigue* of the muscle. This assertion, however, is disproved by the experiments of Goldscheider and by the introspective evidence just mentioned. The feeling of tension is very different from the feeling of fatigue; and it cannot have its origin in the skin alone, as is shown by many pathological cases, and by experiments in artificial anæsthesia of the skin by Goldscheider[1] and Chauveau.[2] These latter facts, to be sure, do not prevent the assumption of the joints and tendons as the exclusive seat of the feelings of tension. To this question we shall return later. But a further conclusive proof that fatigue-sensations are not the only ones yielded by centripetal nerves connected with the muscles is afforded by certain physiological experiments described below, which tend to show that muscular activity is almost, if not quite, impossible without the regulation afforded by accompanying sensations, either from the skin or from the muscles themselves. And there is no valid reason why we should not assume that separate systems of sensory nerves exist for fatigue and for muscular excitation.

3. An attempt has recently been made by Dr. Waller[3] to show, by means of an experimental analysis of the phenomena of fatigue, that the sense of effort cannot be due wholly to centripetal sensations from the muscles. His reasoning is as follows. The sense of fatigue bears the same relation to the sense of effort as an after-image in vision bears to a direct image. The sense of effort is a sensation accompanying muscular action; the sense of fatigue is a sensation consequent upon muscular action. They have a common cause: the changes which produce the first produce also the second. The seat of both is identical, and if we determine the one we thereby determine also the other. A careful series of experiments proved, in agreement with Mosso's results, that fatigue manifests central as well as peripheral objective signs: if voluntary activity of a muscle be continued until it is no longer possible, direct electrical excitation of the muscle can still evoke fresh work; showing that central exhaustion intervenes before the power of work of the muscle is exhausted. Since, then, fatigue is due to central as well as to peripheral exhaustion, the sense of effort must accompany central as well as peripheral activity. There must be a central sense of motor innervation, which aids in controlling the muscle's movement.

This theory of feelings of central innervation is still much believed in, and receives from time to time apparent support from fresh evidence, such as that of Dr. Waller. We have not space here to discuss it at length, but must refer for a refutation of arguments in its favour to Prof. James' work (ii. 493 ff.), or to the dissertation mentioned at the beginning of this article. The experiments of Dr. Waller, although themselves of great

[1] *Loc. cit.*, § 121. [2] *Brain*, 1891, p. 153. [3] *Ibid.*, pp. 179 ff.

value, add nothing to its plausibility. The fault of his reasoning lies in its major premise, which contains three unwarranted assumptions: (1) That the objective signs of exhaustion are always indicative of a previous expenditure of energy in the same parts. That this is not wholly true is shown by experiments of Mosso,[1] which prove that intellectual work, or activity in other muscles, diminishes the power of work of unused and unfatigued muscles. (2) That a subjective sense of fatigue is indicative of a corresponding previous effort, and sense of effort, in the same parts. But the feeling of fatigue located in the eyelid is not at all commensurate with the amount of work this organ has accomplished. It is sometimes excessively strong in the morning, after complete repose of the muscles involved. (3) That objective signs of exhaustion are indicative of a subjective sense of fatigue, and objective signs of effort of a subjective sense of effort, localised in the same parts. If this assumption were admissible, then there would be a shorter way to prove the result at which Dr. Waller arrives. We know without elaborate experiment that the central organ exerts energy; if this is indicative of a sense of effort localised where the effort takes place, then the central sense of motor innervation is proven. But the assumption is not admissible. A sense of fatigue does not necessarily accompany objective exhaustion, nor when it does is it necessarily localised where the objective exhaustion exists. And similarly the sense of effort does not necessarily have its seat everywhere where objective activity is taking place. In Dr. Waller's experiment, the central exhaustion due to moving the finger is not detected by a feeling of mental fatigue, but by the discovery that the peripheral effect no longer takes place when an attempt is made to will it. Careful observation in cases of more extreme mental exhaustion will not reveal any feeling of fatigue localised in the central organs themselves; but will show that a feeling of mental exhaustion, fatigue, sleepiness, is composed largely, probably wholly, of fatigue sensations having their origin in the eyes, eyelids, and various muscles. Similarly a feeling of effort, whether mental or physical, is localised not in the central organs either wholly or in part, but in various muscles of the head and body. Dr. Waller is entirely right in saying that effort and fatigue, the consequence of effort, manifest central as well as peripheral *objective* signs. But this is no indication whatever that they manifest central *subjective* signs. The chemical products of mental and muscular activity, as we have seen, affect the power of work of unfatigued muscles; and doubtless also act as stimuli to peripheral fatigue-nerves, especially of the parts most involved in the feeling of mental exhaustion. And the mental activity itself is felt as an "effort," because it excites activity in muscles, which send centripetal impulses to the brain.

[1] Dubois' *Archiv*, 1890.

There may be this truth in the innervation theory : It is quite possible that no consciousness is possible without accompanying movement ; that a cortical cell cannot be aroused to activity sufficiently intense to be accompanied by consciousness without discharging a portion at least of its energy into centrifugal paths. If this theory be true, then every cortical cell would be at once sensory and motor in its nature ; and it could exhibit no sensory activity unless at the same time it executed its motor functions. But even then the centrifugal discharge would not be itself perceived as such ; the sensation would correspond to the total activity of the cell at the moment of discharge, and this activity would be directly caused in every case by centripetal or intracortical impulses. That a centrifugal effect necessarily accompanies it, could only be detected by fresh centripetal impulses which announce the peripheral effect of the centrifugal discharge. There would be no reason to say that the " central innervation " is felt as such, nor would it be so felt any more in the case of a feeling of effort than in the case of a sensation of red or of sweet. But whether this theory is true or false, in every case the "feeling " of effort always results from centripetal impulses immediately following, and aroused by the effects of, the original centrifugal discharges.

4. A remark by A. W. Volkmann is quoted by Prof. James (ii. 198), which claims that " muscular feeling gives tolerably fine evidence as to the *existence* of movement, but hardly any direct information about its extent or direction. We are not aware that the contractions of a *supinator longus* have a wider range than those of a *supinator brevis*," &c. The argument here is directed evidently only against a knowledge of the movement of the *muscle* itself. The muscular feelings are, however, eminently fitted to inform us as to the existence, the extent and direction of movements of the *limbs*. We have already seen that the muscular elements fuse with other excitations into complexes in which they cannot themselves as such be readily recognised. They never occur in isolation, so they have not ordinarily been separated out of the complexes in which they occur, and localised in the muscles from which they originate. And it is quite true that such localisation as is possible can never be carried far enough to do more than inform us in certain cases of the existence, but never of the extent and direction, of the *muscle's* movement. Associated, however, in countless ways into firm compounds with other sensory and representative material, they can be of essential assistance in exactly determining differences in perception of movements of bodily parts, in muscular or mental effort, in attention, in emotion.

5. Müller and Schumann [1] call attention to the fact that to any

[1] " Über die psych. Grundlagen der Vergleichung gehobener Gewichte," in Pflüger's *Archiv*, xlv. (1889) 65 ff.

particular degree of intensity of excitation of muscle-nerves there does not always correspond one and the same particular position of the limb. "Exactly the same pressure on the sensory nerves of the muscles can exist in the case of a high degree of contraction and a slight degree of tension, as exists in case of a slight degree of contraction joined with a high degree of tension." This remark is quite true; but it is also quite true, as every one admits, that we have learned by experience to distinguish exactly between a mere tension of the muscle, unaccompanied by movement, and an excitation which causes the limb to move. "The pure muscular feeling alone is as utterly unable to give any information in regard to the extent or direction of movement, or the amount of resistance, as is a simple sensation to do this in regard to objective properties and things."[1] But each different combination of extent of movement, tension (whether caused by resistance of the antagonists or of outer objects), and rapidity yields a different complex of sensations; and by aid of visual and tactile sensations, we have learned to distinguish and judge these with considerable accuracy. With each particular extent of movement without resistance we have learned by long experience to associate a particular degree of increasing tension in particular muscles, a particular decreasing tension in the antagonists, and a particular amount of rubbing in the joint. Other combinations, of unchanging tension in the muscles and their antagonists, together sometimes with sensations of pressure on the skin, and without simultaneous rubbing of the joint-surfaces against one another, correspond to tension without movement, caused by resistance of the antagonists or of outer objects. If to these latter combinations, with slight modifications in changing tensions, a particular joint-sensation is added, we know that the result is due to a movement combined with antagonistic or outer resistance. In case the resistance is great, tensions are felt in a much larger number of muscles, including those of head, neck, back, and breast. With each particular extent of movement, therefore, the sensations differ according to the resistance. There are similarly other differences in sensation corresponding to different degrees of rapidity. All possible combinations of extent, resistance, and rapidity are thus associated with as many different shades of the sensation-complex. The different sources of the elements of the complex are not regarded; but the total impression caused by their different combinations is recognised and judged.

We thus see that the objection of Müller and Schumann is fully answered. If we had to rely upon sensations from the contracting muscles alone, these would be indeed ambiguous. But this is no longer the case when we consider that our judgment is aided by elements from the antagonists and from the joints,

[1] Horwicz, *Psycholog. Analysen*, i. 204.

which make the total complex different for each different objective combination. We are thus enabled to make allowance for the tension of the muscle, and to distinguish it from the muscular excitation which produces the movement. With one and the same movement of the limb, plus one and the same amount of resistance, is always joined one and the same complex of muscular impressions; and we know with considerable accuracy what part of the complex is due to resistance, and what part to the movement of the limb.

6. This analysis enables us to answer another objection raised by the same authors. They show that if, for example, weights of 600 and 1200 grains were several times raised alternately, and then suddenly, without the knowledge of the subject, one of 800 gr. was substituted for that of 1200 gr., the 800 gr., on account of an adaptation of the motor impulses which had been formed for the 1200 gr., would be raised with great rapidity, and would often be judged lighter than the 600 gr. They conclude that in comparing weights we compare in general only the rapidities of the resulting movements, and think that the more quickly raised weight is the lighter. According to them, this fact contradicts not only the theory of central innervation sensations, but also the theory that muscular sensations inform us in regard to the amount of resistance. "For according to these theories the weights raised with the stronger impulse would appear heavier."[1] In opposition to this theory it can be shown that not the weights raised with the greater impulse, but those which at the moment of raising demand a greater readjustment of the lifting and the antagonistic muscles, appear heavier.

We have seen that the countless different shades of the complex of sensory impressions enable us to distinguish with some accuracy between movement and resistance. But the very fixity of these associations cause also some illusions, when the outer circumstances joined with particular complexes are not the usual ones. In comparing weights according to the method used by Müller and Schumann, the conditions are not the same as in our ordinary experience. The motion is started before the weights are brought to bear, and the endeavour is made to lift both the weights which are to be compared, with the same rapidity to the same minimal height (*loc. cit.*, p. 49). As soon as the weight begins to be felt, the necessary regulation of lifting, of antagonistic, and of other aiding muscles, is made, and the weight rises usually with the desired rapidity to the desired height, and is estimated as accurately as is possible. But if for any reason the muscles are unconsciously "set" beforehand for a heavier weight, then in the moment of actually seizing the weight, there is not the usual gradual readjustment to the amount of resistance. The force of tension already present is almost or

[1] Müller und Schumann, *loc. cit.*, pp. 46-56.

more than enough to overcome the existing resistance, so that the latter when applied offers little or no obstacle to the further progress of the movement; an effect which would be produced if the weight to be lifted were very light, or even if a pull were at that moment exerted on the moving arm. In estimating weights by thus lifting them, we estimate the readjustment of the contracting muscles and of their antagonists which takes place at the moment of seizing the weight; if the readjustment is small, we judge the weight to be small; if large, we judge the weight to be large. We do not make allowance for the already existing impulse, nor for the resulting rapidity, because the conditions of experiment are such that we are ignorant of them. We have no consciousness of the greater strength of the original motor impulse, and judge only according to the effects, for the reason that we endeavour to make the impulses always alike, and that this expectation, together with the fact that the attention is directed not on the impulse, once it is started, but on the readjustment which enables us to judge the weights, induces us to believe that the impulses are alike. Moreover, we have no central sensations of motor innervation which could inform us that the impulses have not fallen out as we intended. The case is similar with the resulting rapidities. These are usually practically alike, when no previous motor adaptation has occurred, and a greater difference than the ordinary average error in judging rapidity may now be disregarded, the attention being fixed on the circumstance which is of importance for judgment—the readjustment at the moment of seizing the weight. Only, if the rapidity happen to be much greater than usual does the experimenter become conscious of the greater motor impulse, and then he either still underestimates the rapidity, or is so surprised at the unexpected result that no sure comparison of the weights is possible (Müller and Schumann, *loc. cit.*, pp. 37, 40, 61).

In this way all the results obtained by Müller and Schumann can easily be explained. The essential point is not that the more rapidly raised weight appears heavier, for the experimenter is unconscious of the difference in rapidity. If we compare two weights which already lie in the hand when we begin to lift it, the heavier one does not appear lighter than the other if it is raised faster, because, before the impulse can commence any movement at all, the resistance must be overcome by a muscular adjustment corresponding to the weight. Too great a difference in rapidity can at the most make an accurate judgment impossible. In the experiments of Müller and Schumann the greater adapted impulse may be revealed to the *spectator* by the greater resulting rapidity. But for the *experimenting person* the essential thing is neither the greater rapidity nor the prepared impulse—he intends to make them alike in both liftings, and must regard them as alike, or at least underestimate the difference, if the illusion is to take place—but the above explained readjustment of the

muscles at the moment of lifting. These authors base their explanation therefore on a factor which cannot influence the judgment of the person experimenting. Their assertion that the muscular changes cannot explain the illusion is a mistake. Without impressions from the muscles the illusion could hardly take place, and then only in case the tendons were able to give an indication of the existing muscular tension.

7. There appears to be no greater sensibility for differences in weight or in minimal movement, when the movements are actively carried out, than when they are produced passively or by faradisation. These facts have been used as arguments against the importance of the sensibility of the muscles.

Bernhardt[1] made the first experiments in raising weights by means of electrical stimulation of the nerve. He did not believe in the existence of muscular sensibility. His own results, as he himself confesses, are not very trustworthy. Ferrier[2] and Goldscheider[3] have since made similar experiments, and found that the estimation of the weight is almost exactly as accurate when the movement is not voluntary, but is produced by electric or by reflex stimulation. Müller and Schumann have also repeated these experiments, with the result "that the painful sensations in the skin produced by the electrical stimulation prevent a comparison of the weights in *raising* them, so that the judgment in regard to the relation of the weights must be founded on the impressions received in *lowering* them".[4]

This lowering of the arm is of course an actively regulated movement, and hence we could hardly expect any great difference in the results yielded by these two methods of estimating weights.

Goldscheider has experimentally shown that the just perceptible minimum of excursion in the case of passive movements hardly differs from that of active movements. This fact, however, proves nothing against the importance of muscular impressions in the perception of movement. Active movements differ from passive not only in the anticipatory image, which precedes and directly causes the former, but also in many peripheral accompaniments. In active movements much more extensive groups of muscles take part; there is a greater degree of tension in contracting and antagonistic muscles, and in the tendons; the joint-surfaces are pressed somewhat more strongly against one another. But in passive movements also muscles are contracted and their antagonists stretched and joint-surfaces glide against one another.

[1] *Archiv f. Psychiatrie*, iii. (1872) 627 ff. "Bernhardt's data have become greatly distorted by quotation" (Waller, *loc. cit.*).

[2] *Functions of the Brain*, pp. 228, 392.

[3] *Archiv f. Anat. u. Physiol., Phys. Abt.*, 1889; *Zeitsch. f. Psych. u. Phys. der Sinnesorgane*, i. (1890) 148.

[4] Müller and Schumann, *loc. cit.*, pp. 62 f.

All the elements necessary for judging the movement are therefore present in both cases, and there seems to be no reason why this judgment should be more accurate in the case of active than in the case of passive movements.

8. Goldscheider found that when he artificially diminished the sensibility of the *joint*, the sensitiveness for active movements was diminished quite as much as for passive movements.[1] He believes that this is a proof that sensations of movement have their origin principally in the joints, and not in the muscles. There is much strong evidence, which these experiments support, that the joint-sensibility is a necessary factor in the accurate perception of movement; but none whatever that it is the only necessary factor. By careful introspection it is possible to obtain a pure sensation localised in the joint, as well as the pure muscular sensation also (compare the experiment of Goldscheider mentioned under 1 above). But each of these is as different from a feeling of movement as the skin-sensations are. Suppose that, as seems probable, a perception of movement is based upon a complex of excitations into which enter elements from joints, muscles, tendons, skin, and other parts, all of these being, however, overshadowed by the visual image of the movement (or in the blind probably the tactile image of the gliding of the limb over surfaces), which they arouse. If now any class of these elements fails, then those which remain might still call up the visual image; yet the normal feeling of the movement would be destroyed, and certain disturbances in judging the movement would necessarily result. That this is the case when the joint-sensibility is diminished and the muscular sensibility retained, is shown by these experiments of Goldscheider. It seems quite as probable that similar disturbances would result in case the muscular sensibility were destroyed and the joint-sensibility retained, although we cannot test this experimentally and know of no pathological cases. Thus neither joints alone nor muscles alone can furnish elements of sensation which would supply the place and do the work of the normal combination of both.

The intervention of impressions from the joints may be necessary to distinguish a mere tension of muscles from an actual movement. But certain facts seem to prove that these impressions from the joints have very little to do with the estimation of the extent of the movement. Of two movements, for instance, which we endeavour to make of equal extent, that one is made in general shorter, at the beginning of which the active muscles are already more contracted. Impressions from the joint cannot explain this illusion, for it is impossible to see how they would differ, whether the arm was more or was less contracted at the beginning of the movement. Loeb endeavoured

[1] *Zeitschr. f. kl. Med.*, xv. (1889) 104 f.; *Archiv f. Anat. u. Phys., Phys. Abt.*, 1889, pp. 496, 542.

to explain it by means of innervation-sensations, but the existence of these it is impossible to admit. By the aid of the muscular sensibility, however, we can fully understand the cause of the illusion. With a given angle of rotation of the limb, the increasing pressure within the muscle would naturally be greater when the muscle is already more contracted than when it is less. Moreover very different groups of muscles take part in the two movements. Therefore, in order to obtain the same sensation of extent in both cases, we must execute movements of actually different extent. This explanation is supported by the fact[1] that the shortening influence is effective only when the distance between the starting-points is sufficiently great to make the degree of contraction of the muscles considerably different in the two cases.

Under 6, above, we discussed another illusion, where weights were underestimated on account of the unconscious adaptation of the motor impulse to a heavier weight. Under these circumstances the extent of movement is also underestimated, as well as its rapidity.[2] This illusion, as we have seen, can be explained by means of the muscular sensibility, but not by means of that of the joints.

So we see that the above objection of Goldscheider offers no reason to question the sensibility of the muscles, and that the latter must be assumed in order to understand facts which the joint-impressions alone cannot explain.

9. With many movable parts of the body—eyes, lips, tongue, &c.—there is no joint connected. Yet by the opponents of muscular sensibility attempts are made to explain without its aid our knowledge of these movements. Goldscheider[3] believes that only the position, and not the movement, of the eyeball is perceived; and that for the tongue there exists only a very slight feeling of position, and none at all of movement. It can hardly be doubted however that we do have very distinct feelings of movement in both. Extremely delicate and accurate movements are demanded of both these organs, but the conscious recognition and judging of these movements as such is of very little practical use, and thus has not been much developed. It is very necessary to know what movements the arm executes; it is not necessary to recognise the movements of the tongue, for it manipulates the food and takes the positions necessary in articulation without requiring attention to be directed upon itself,—consciousness would disturb more than aid in this case.

More serious objections have been raised against the existence of muscular impressions from the eyes. Müller and Schumann[4]

[1] *Über Bewegungsempfindungen*, pp. 98 ff.

[2] *Ibid.*, p. 109.

[3] *Zeitschr. f. kl. Med.*, xv. 117 f.

[4] *Loc. cit.*, pp. 82 ff.

deny that these can explain the delicate and accurate localisations which we make in the field of sight. In the first place, they call our attention to the fact that by one and the same direction of gaze, the gaze can possess a very different fixity,—that is, can be maintained with different tension of the eye-muscles which counterbalance each other. The muscular tension is likewise different, according as we glance along a line rapidly or slowly, and with greater or less fixity. But as we saw above under 5, experience must teach us to make allowance for the amount of tension, since the feeling of greater tension in the antagonists opposes itself to the greater tension of the contracting muscles, and the resulting sensation cannot be ambiguous. To one and the same extent and rapidity of movement, plus one and the same degree of resistance by the antagonists, corresponds always one and the same complex of impressions from the contracting and antagonistic muscles, from displacement of the stimulus on the retina, and from rubbing of the eyeball's surface along neighbouring parts.

We are rarely aware, it is true, of the movements of the eyes as such, but this is because consciousness of them is of little importance, and they do not therefore attract the attention. The muscular impressions form a complex with the sensations of light, which awakens in consciousness not the idea of a particular position or movement of the eyeballs, or of the excitation of a particular portion of the retina, but the idea of a particular position of the point of fixation in a three-dimensional outer space. The same principle is operative here as that which induces us to regard the complex of impressions resulting from the movement of an extremity, not as such and such contractions of muscles, rubbings of joint-surfaces and excitations of the skin, but as a perception of a particular kind, in which the visual image of the moving limb is the most prominent conscious feature. So here, muscular, tactile, visual and associative factors combine into a product whose business it is to represent in consciousness the outer world and movements in it. Convergence of the eyes is not felt as movement of them, but as nearing of the point of fixation. Their violent movements in dizziness are not felt as such, but as movement of the entire surrounding space. If we shut the eyes and move them, we cannot tell the exact direction in which we will be looking when we open them, because we have never learned to judge accurately the extent and direction of eye-movements as such, uncombined with the more important retinal impressions. Some illusions of movement doubtless exist, which cannot be explained by unconscious eye-movements alone; but they do not disprove the importance of these movements in our representations of outer space.

An observation by Raehlmann and Witkowski[1] is thought by

[1] *Arch. f. A. u. Ph.*, 1877, pp. 462 ff.

Müller and Schumann to furnish absolute proof against the theory which we are defending.

"These two investigators cite the case of a man who had been completely blind for seven years. If he be asked to look toward the right, his eyes move toward the right without divergence. 'If he attempt now to look toward the left, fully associated movements of both eyes occur, but the eyes are turned thereby only to the middle of their orbits, and cannot be brought further in spite of repeated demand. The blind man has the idea that he has carried out the movement toward the left to its fullest extent. Only if a noise be made at the left and the localisation be thus made easier for the blind subject, and then the demand be repeated, can the rotation toward the left be at once promptly executed.' These phenomena disprove therefore completely the theory that muscular or tendon or innervation-sensations bring about our so delicate faculty of localisation."

These facts present no very great difficulties. They can easily be explained if we consider that this blind man mistook a feeling of tension in other muscles for a tension of the eye-muscles, as might easily occur. If we wish to bring about an excessive strain of particular muscles, the impulse may easily go astray, especially in the case of such half-voluntary muscles as these, and we think we are exerting our full force on the muscles in question when in reality a large part of the effort is concentrated elsewhere. In case of strained fixation of a particular point, for instance, we can by careful attention discover the fact that a part at least of the resulting feeling of tension is located not in the eye-muscles, but in muscles of forehead, lids, neck, and various other places; and it is located in these the more clearly, the stronger the strain we exert. In hypnotism it is very easy to prevent the subject from executing particular movements. He makes extreme efforts, contracting thereby other muscles, but thinking that he is strongly endeavouring to execute the movement demanded. Blind persons are naturally much less able to execute and judge eye-movements, than are normal persons whose eyes are closed; and in the latter case, as we have seen, the power is not great. "A person blinded by atrophy of the nerve of sight can never again show energetic movements of the eye, although his whole motor apparatus is intact. Even if he still carry out eye-movements, yet his gaze never loses its well-known lifeless and staring character. . . . A blinded eye squints. Weakness of sight suffices to make the correct co-ordination of eye-movements impossible. The deliberately determined impulse of will is not able to bring about the correct muscular contractions," without the aid of retinal impressions.[1] So it is easy to see why the blind patient under discussion could not execute accurate movements unless some

[1] Exner, *Über Sensomobilität:* Pflüger's *Archiv*, 1891, pp. 604 ff.

actual sense-impression aided him in locating some definite outer point; and how he might easily mistake a feeling of strain originating elsewhere for that which comes from extreme tension of the eye-muscles. The actual position and motion of the eyes, the perception of which in itself is never very delicate, would then easily remain unnoticed. The difficulty of analysing the exact muscular strains which occur in an act of attention, of effort, and in emotional states,—an analysis which only recent psychology has been able to make to any great extent,—shows conclusively that one such strain may most easily be falsely localised and mistaken for another. Such extreme strains however do not occur in the ordinary use of the eye-muscles, and hence this argument against their importance for our faculty of localisation fails. How important they may actually be has been recently established by Münsterberg, who claims that his experiments show "that every change in the movement, position, and use of the eyes makes itself perceptible for the estimation of space-magnitudes in the interpretation of the impression of sight".[1]

We will turn now to the positive evidence, and examine first the result of histological investigation. Sensory nervous fibres have been discovered, which terminate in Pacinian corpuscles in the sheath and superficial connective tissue of the muscles. As to sensory fibres in the contractile substance itself of the muscle there is no direct histological evidence; the apparent discovery of such by Sachs has been proven unreliable. Golgi[2] discovered a "musculo-tendinous" organ, situated in the zone of passage from the muscle to the tendon, connected with the fibrils of the one and the tissue of the other, and supplied with sensory nerves. His pupil, Cattaneo,[3] also investigated them, and believes them to be the organ of muscular sensibility. "These special organs are situated, like a sort of dynamometer, between the organs which represent the motor power (muscular fibres), and the part upon which this force primitively acts (the tendons)." Since each excitation of the muscle must influence these organs, they might, perhaps, be the only sensory organs connected with the muscles. By means of them, through the processes already described, the distinction between tension and movement-producing excitation of the muscle could be made, and the muscular movements be thus enabled to exert the influence on consciousness which it seems necessary to ascribe to them.

Physiological research has also already thrown considerable light on this subject. Sachs[4] claims that stimulation of isolated

[1] *Beiträge*, Heft 2, p. 166.

[2] *Sui nervi dei tendini dell' uomo*, &c.; Torino, 1880.

[3] *Sugli organi nervosi terminali musculo-tendinei;* Torino, 1887.

[4] Reichert's *Archiv f. A. u. Ph.*, 1874.

muscles in the frog causes reflex cramps; that some of the intramuscular nerves can be stimulated without causing contraction; that after section of the motor roots degeneration of only a portion of the muscular nerves takes place. François Franck[1] repeated some of these experiments and arrived also at the conclusion that the muscle contains centripetal fibres. Experiments of another kind are even more conclusive. They show that paralysis can be brought about as well by severing the sensory nerve which ends in the region of the muscle, as by section of the motor nerve. The latter, then, cannot function alone; attendant sensory impulses are indispensable to the correct carrying out of the movement, and serve thus as its critical regulation. Bell (1832), Magendie (1841), and others, had already made investigations of this sort. Exner[2] describes recent experiments by himself and Pineles, which lead to the same result: movement is always made impossible, or at least extremely awkward, when the sensibility is destroyed. The dumbness of a deaf person is thus a disturbance of sensomobility, and can be removed only if he be systematically taught the touch-impressions of the organ of speech, which can then take the place of the normal acoustic regulation.

In the above experiments, the sensory nerves operated upon supplied the skin and other sensitive parts, not the muscles alone. While they prove therefore that sensory impressions are necessary for motor action, they do not show that these impressions need necessarily come from the muscle itself. But Prof. Chauveau[3] found in the horse two muscles supplied with distinct sensory and motor branches: (A) a voluntary striated muscle, the sternomastoid; and (B) an involuntary striated, that of the œsophagus. Section of the motor branch causes paralysis in both. Section of the sensory branch of A does not suspend response to voluntary stimuli, for being associated with other muscles in its motor functions, the sensory impressions from the muscles whose nerve-circuit is intact are sufficient to bring about the action of the whole group Section of the centripetal fibres of B always markedly disturbs the motor functions. Electric stimulation of the centripetal fibres of both A and B produces tetanisation (or contraction), but after an appreciable delay, caused by the transmission of the excitation through the nerve-centres. Tetanisation never occurs when, after division of the nerves, we excite the central end of the centrifugal branch, or the peripheral end of centripetal branch. Prof. Chauveau therefore thinks that all muscles are supplied with motor and sensory nerves; and that the terminal filaments of the sensory nerve have probably no

[1] *Dict. encyclopédique* (Dechambre), 2me Série, Tome 12, p. 535.

[2] *Uber Sensomobilität*, Pflüger's *Archiv*, 1891, pp. 592 ff.

[3] "On the sensori-motor Nerve-Circuit of Muscles," *Brain*, 1891, pp. 145 ff.

direct relation with the muscular elements, but contribute in forming the preterminal anastomoses or networks of the motor nerves, where they are directly excited by the motor current, and thus aid in forming a complete sensori-motor nerve-circuit, which is necessary for the action of the muscle.

Most of the *psychological* arguments have been directed against the theory of muscular sensations. In showing their invalidity, we have also discussed some facts which offer distinct support to the assumption of muscular elements in consciousness. The introspective facts under argument 1, the experimental under 8, are examples. But there are also many other facts which require this assumption, unless we are willing to accept in our explanations various purely mental activities, which work over the material presented to them in consciousness, and in doing so necessarily interfere with the mechanical continuity of material events. This should be our last resort, not our first one. We should try to base our psychological science on suppositions in harmony with those of the other sciences, banishing from it if possible purely spiritual influence on physical processes, as "vital forces" have been banished from physiology. Only if we find that this basis fails to explain all facts should we abandon the assumption of unbroken material continuity. Whatever our conception of the ultimate connexion of consciousness with its material conditions, whether we regard them as entirely parallel and independent series throughout, or consider consciousness as a mere accompaniment of certain physical processes in the nervous system, or believe that the two are at bottom identical—each of these has been defended in recent psychological literature—we must at all events endeavour to conceive consciousness as in no way interfering with the causally ordered course of material processes, whether in the brain or elsewhere. This conception need not interfere with the demands of our moral convictions, for many of the world's deep thinkers have founded, and are still founding, on this basis ethical and religious systems.

But this conception becomes possible only on the assumption of sensory elements from the muscles, which arouse in us our feelings of psychical activity. To each psychical fact must correspond some physical fact in the nervous system. As the physical excitations in the brain are all aroused by centripetal excitations and the revivals of previous centripetal excitations, so consciousness must be composed wholly of sensations and the reproduction of sensations in memory. If this be true, it is impossible to understand all the content of our consciousness unless the state of the muscular system is somehow represented in it. To each idea must correspond some complex of centripetal excitations, either immediate or associative, or both. As the idea of Self is based largely on the great mass of excitations from all the internal organs, and such faint ones from the special senses as remain un-

noticed in themselves, so muscular elements must form the texture of all feelings of emotion, of activity, of effort, attention, volition. They must be joined with others in all perceptions of movement. The original vague feeling of extensity demanded by the nativistic view of space-perception must also have its physiological concomitant, and this can be no other, in the case of visual space, *e.g.*, than the complex of feelings of accommodation, of muscular changes, &c., which are joined with each retinal impression, and which must precede all definite idea of movement, and all orderly classification of space by means of movement. Other feelings still more vague, so many of which exist—perhaps even the feelings of tendency and transition, which Prof. James describes—may very likely be in part, aside from purely cerebral elements, feelings of muscular attitude. In fact, out of muscular elements is built up a large part of our mental life. That the compounds into which they enter are so different from the separate elements when perceived alone is not surprising. Consciousness is full of such cases. Just as H_2 and O when combined produce very different effects on consciousness from those of each component alone, so a combination of centripetal excitations may give rise to a mental state utterly different from the sensations which result from the presence of each alone. In this way a perception of movement, or an emotion, is as different from the single sensory and associative elements which enter into it as a sensation of purple is from one of blue or of red. It is a part of the task of psychology to find the peripheral sources of the various elements which compose a total excitation, for only in this way can it fully comprehend the nature of mental states. And it must fail in its search, unless it admit that the muscles are the peripheral sources in a large variety of cases.

All this must necessarily follow, I repeat, if we accept in any of its forms the theory that consciousness in no way interferes with the causal chain of events in the physical world. But even if we are unwilling to go so far, and insist on allowing to consciousness some degree, large or small, of such materially effective influence, yet there still remains much evidence that muscular elements are significant factors in our mental life. The objections to this theory, we have seen, are not tenable, and there are many positive reasons for accepting it. Moreover, we see also that a sufficient anatomical basis for the theory has already been established. By Chauveau's theory the state of the muscle might be revealed by the direct effect of the motor current on sensory nerves. The musculo-tendinous organ is admirably fitted to furnish similar information. It is not impossible however that sensory nerves may be found to end within the muscle itself, instead of in the preterminal network. In any case the important thing is that in some way muscular excitations influence the cortical centres, and that it be possible to distinguish between an excitation which results in tension, and one which produces movement. There is sufficient reason to believe that this occurs.

DR. MÜNSTERBERG AND HIS CRITICS.

By E. B. Titchener.

In my recent criticism of Prof. Münsterberg's *Beiträge* I attempted to show, firstly, that the author was guilty of gross inaccuracy in his psychophysical experimentation, and that the theories which he based on this latter were therefore so far valueless; and, secondly, that he had not correctly represented the views against which he polemises. In the last number of Mind Mr. Alexander replies to my objections mainly from the side of theoretical psychology; in other words, defends Prof. Münsterberg's hypotheses against an attack which I had no direct intention of making. He has, I fear, been misled by the fact that I offered alternative explanations of the *Beiträge* results. On these I would lay no great weight, in face of the generally imperfect record of the experiments, and the nature of those which are more completely described. In my present remarks I shall only refer in this connexion to my interpretation of the reaction-times of pt. i., which Mr. Alexander has misunderstood.

In the research on the Time-sense occurs the following sentence: "Die Frage, aus welcher Quelle *unsere Spannungsempfindungen*, *unsere Bewegungsgefühle* stammen, ist bekanntlich noch Gegenstand lebhafter Discussion."[1] This passage is, I think, a sufficient answer to Mr. Alexander's note upon my treatment of the 'muscle-sense' question as handled in the *Beiträge*.

I. The expression 'automatic co-ordination,' for which, perhaps, 'fixed association' would have been better, referred to the practised connexion between category and finger. In this respect the 'muscular' reactions were not muscular at all; for the preparation consisted not simply in the idea of the movement to be carried out, but in the idea of the connexion between this and the appropriate category.[2] The large number of false reactions, which in this case rose to 25-30 p.c., is a result which on a calculation of probability points to a purely accidental subsumption of the called word to its particular category. That the number of these false reactions did not amount to 50 p.c. of the whole number of experiments is easily explicable. A correct association between the stimulus-word and the practice-category merely presents the relatively most favourable case out of the various possibilities. If Mr. Alexander really maintains that the experiments suffice for the conclusion which Prof. Münsterberg has drawn from them, one can only suppose that the conclusion weighs more with him

[1] *Beiträge*, ii. 20; cited in my former paper. The italics are mine.

[2] i. 76.

than the experiments. For as regards the latter two things seem certain: (1) that the constant difference in the times is to be referred to the above-mentioned difference in preparation; and (2) that the large number of false reactions is an inverse measure of the advantage which a correct subsumption of word to category possesses in the developed consciousness.[1]

II. In the sentences quoted by Mr. Alexander from my remarks upon the Time-sense investigation, I had intended to use the phrase 'concentration of attention' just in Prof. Münsterberg's sense. I do not think that the subject becomes clearer if I write: 'the condition of the psychophysical organism is that of strain-sensing a strain-sensation'.[2]

III. I am far from denying that eye-movements took place in the Attention-experiments; but the point should have been verified. I pointed out how easily this side of the investigation, so important for the theory, could have been carried out.[3]

V. The strain-sensations of the study of Localisation by the Ear are, of course, hypothetical, as Prof. Müller pointed out.[4] I think that Mr. Alexander has overlooked the word 'practically' which qualified my equations. Granting the possibility of the sensations, we have for 90° H = 270° F (the instance which he

[1] (*a*) When I wrote that the beginning of the association-process before the calling of the last word of a sentence was a fatal weakness in the experimental method, I was, of course, thinking of the time-results. What psychophysical processes does Mr. Alexander suppose these to cover? The control which he assumes for their validity I had expressly called in question. (*b*) I readily admit that Mr. Alexander has given the correct interpretation of the passages, pt. i. 73. Prof. Münsterberg's ὕστερον πρότερον had misled me. (*c*) As regards finger-movement, I do not see that the experimenter has any control; that the reagent can be deceived I can affirm from my own experience and from that of others. (*d*) I cannot find in the literature any note as to the percentage of false (simple) reactions, which occurs with use of the muscular method. In my own experiments (*Phil. Studien*, viii. 140, tab. i.) the false and premature reactions taken together amounted to 8 p.c., and I am told that this is rather a high than a low percentage. I have not maintained that "the constancy of the muscular reactions is due to perfect practice," either as regards the simple form, or that of Prof. Münsterberg.

[2] (*a*) Mr. Alexander can hardly mean seriously to maintain that a constant error does not affect results which are to be turned to relative account. (*b*) I had thought to show, by the use of inverted commas, that my objection to the collocation "timeless pause" was verbal. From a page bristling with factual objections, Mr. Alexander has selected just this one!

[3] Why is the attention necessarily relaxed, in the Helmholtz experiments, if it is subject to oscillations (rise and fall)? The point is, that as the threshold for the moving eye is lower than that for the resting eye, the question of the appearance of the oscillations should be determined for this lower threshold.

[4] *Götting. gel. Anzeigen*, June 1, 1891, p. 423.

has chosen) an extremely easy +-movement and a very difficult −-movement (thresholds a and b) for H, and two moderately difficult movements (thresholds c and d) for F. Yet $a = b$, and $\frac{a + b}{c + d} = 3$ or more. In the case of 180° H = 270° S the relation of the thresholds, 10 : 1, appears to me on the author's theory quite unintelligible.[1]

VI. The first thing to notice in Mr. Alexander's remarks upon the *Neue Grundlegung der Psychophysik* is his own instance of an equating of disparate sensations. We equate the taste-sensations derived from a bottle of champagne and the hearing-sensations of a Joachim concert—*through feeling!*[2] But where is this stepping-stone mentioned by Prof. Münsterberg? In his experiments it is a sensational comparison which is in question.

The position that there is no change of standpoint in the handling of the muscle-sense between the second and third *Heft* can hardly be maintained in face of the text itself. According to the second theory, a muscle-sensation can be said to increase in intensity, in that it lasts longer. But how can it decrease in intensity? It cannot begin to last less long. Yet this decrease is possible on the Time-sense view.[3] One is therefore, I think, justified in saying that in the latter connexion the word 'intensity' has its ordinary psychophysical significance.[4]

[1] (*a*) Mr. Alexander says that in this case the experiments themselves are not called in question; but *cf.* my former paper, MIND, xvi. 526, 528. (*b*) The one-ear threshold at 90° H should have been larger than that at 180°, because in the latter case the head has only to turn a quarter-circle, in the former a half-circle, to bring the open ear opposite the source of sound. (*c*) In Docq's theory it is the relative intensity which is in question. (*d*) The static sense is of supreme importance for fishes. That they possess 'canals and no cochlea' is not strictly correct: *cf.*, *e.g.*, Waldeyer's schematic diagrams in Stricker's *Gewebelehre*. Positive arguments for the connexion of the canals with orientation of the body are brought, among others, by Cyon (*Gesamm. physiol. Arbeiten*, 1888). Sewall (*Journal of Physiol.*, 1884) and Steiner (*Functionen des Centralnervensystems*, ii. 1888) obtained mostly negative results; but Breuer (*Pflüger's Archiv*, xlviii. p. 243) remarks that their experiments demand repetition, and hints at inaccuracy of observation. In the case of birds, which is closely parallel with that of fishes, the results seem hardly to admit of two interpretations. For recent physiological opinion as regards man, *cf.* Waller, *Human Physiology*, 1891, p. 458; Kreidl, *Pflüger's Archiv*, li.

[2] "We compare the amount of enjoyment they give us;" pp. 258, 259.

[3] *Beiträge*, ii. 25, iii. 33.

[4] Prof. Müller and Dr. Martius can, of course, take care of themselves; I am only concerned here to meet the objections which Mr. Alexander urges against my own criticism. But it is, I think, a little gratuitous to suggest, as he 'speaking not as an expert' does, that Dr. Martius is guilty of a confusion between "the intensity of the sensation and the amount

A comparison of Mr. Alexander's reply to my criticism with the criticism itself will show how small a part of the objections there raised has been taken into account by him. The above brief remarks meet, I believe, all that he has urged on the positive side. The whole character of my first paper excuses me from discussing at length his subjective estimation of the theoretic value of Prof. Münsterberg's work.

THE DEFINITION OF DESIRE.

By Henry Rutgers Marshall.

Prof. Henry Sidgwick in the January issue of Mind draws attention to a difference between himself and myself as to the analysis of Desire and Aversion, as expressed in my article in Mind for October, 1891. So careful a record of his own introspective observation as he here gives us must be of service to psychologists at large. I feel personally indebted for this clearer expression of his position.

Had I been more cautious I might have strengthened my position by reference to Dr. James Ward's article "Psychology" in the *Encyclopædia Britannica*, or by adding to the definition which Prof. Sidgwick quotes the words italicised in what follows, making it read thus: "*Typical cases* of the state which we call desire . . . clearly involve a very important thwarting of the impulse to go out towards an object," &c., &c. The pains of obstruction were under consideration and the typical desires (which Prof. Sidgwick acknowledges to be most frequently painful) were the only ones to which reference was necessary.

At the outset I must be allowed to say that although the words "thwarting of the impulse to go out towards an object" may possibly, as Prof. Sidgwick says, "be taken to imply that action *for the attainment of the desired end* is prevented" (p. 96), I personally would not defend such an interpretation of my phrase, as Prof. Sidgwick understands the words, for according to his usage, apparently, what he calls the "Action for the Attainment of the desired End" may refer to a long series of activities, perhaps the outcome of an original desire and tending indirectly to bring the results which would have been reached by immediate satisfaction of that desire.

In such cases the complex activities (*e.g.*, the feelings connected with climbing) initiated by the desire (*e.g.*, to reach the mountain top) are in my view quite apart from the original desire, and if

of the objective stimulus," and between "time as measured by the clock, and the sense of time as dependent on muscular sensation" (pp. 258, 259).

these latter be obstructed may bring forward a new desire altogether (*e.g.*, the desire to get a hold upon some tree branch to assist in the climb).

I think, in fact, that the main point of difference between Prof. Sidgwick and myself will be found just here. In almost all, if not all, psychoses of reflexion upon desire we find the state itself "combined with other prominent elements of feeling," as Prof. Sidgwick puts it; and in viewing complex mental states with which desires have once been combined we at times allow the name "desire" to cling to a psychosis after all real desire has ceased to be a component of it. To use Prof. Sidgwick's illustration: One unaccustomed to games involving bodily exercise finds the play tedious at first, because it is obstructive of many activities which would normally arise. When once he reaches a desire to win, the components of his mental state change. The impulse to activity is followed by muscle feelings and intellectual elements that absorb attention. This absorption leads, I think, to the exclusion of the psychosis of desire which initiated the active state, and in reflexion we find in truth no pain, for the desire itself has ceased to be a component of the psychosis. We are dealing, in my view, with a psychosis other than that of Desire. Surely this is the case when the so-called desire is "accompanied by hope, and when, though action for the attainment of the desired object is not possible, still some activity adequate to *relieve the strain on the nerves* is possible" (p. 97). The italics are mine.

To take another of Prof. Sidgwick's cases: The prisoner desires to be free, but the moment he begins to use his file the content of his consciousness surely changes; the predominant elements are now determined by activities looking to the breaking of the bars and perhaps alternate with thoughts of delightful prevision. The original desire may arise momentarily, but I cannot avoid the conclusion that we must postulate the existence of a feeling "which the person feeling it does not recognise as such," if we are to hold that the original desire remains a component of the psychosis through all this shifting of field, as Prof. Sidgwick seems to imply. (Note especially p. 99, l. 34 ff.) When the prisoner reflects upon his pleasurable state of mind, is the desire for freedom part of the complex? I think not.

In the case of hunger I am inclined to think that in describing "appetite" we do not, in ordinary cases, discriminate with sufficient care between the craving and the voluminous and vivid feelings coincident with the wide and very active functioning which ensues at once when food is put into the mouth.

The remaining instance given by Prof. Sidgwick is perhaps less clear. As desire involves capacity for pleasure in its satisfaction, the novelist uses restriction of plot development to serve as a mark that pleasure will be forthcoming. I think here it may be held that the desire has disappeared with the rise of the pleasur-

able excitements connected with the plot development. The desire is certainly not clearly developed unless an obstruction to the flow of thought occurs. If the reader look at the final chapter immediately upon the suggestion that the outcome will there be found, I think desire can scarcely be said to have arisen at all. It appears in a distinctly "uneasy" form only when we restrain the suggested activities and do not look forward. This case may indeed be looked upon as typical. Psychic trains which have appeared as the outcome of desires may at other times arise without any anterior desire; each element following immediately upon its associative suggestion without any thwarting. If, however, these trains have been notably connected with desire, we find it difficult to disassociate them from the desires. In other words, in reflexion we are likely to ascribe to desire activities which have been mere normal associative developments.

It is with no wish to be polemical that I have written thus more at length than is perhaps warranted by any interest attaching to my own opinion as opposed to that of Prof. Sidgwick, but because I feel that he can render us a still further service in this direction. The point I would make is this. Typical desires certainly contain the feeling of a "thwarting of the impulse to go out towards an object" and are painful. This Prof. Sidgwick acknowledges. Further, so far as I can judge, the reduction of the width and vividness of the field which is thwarted reduces the force of desire and also its painfulness. It seems highly probable, therefore, that the thwarting and its pain are of the essence of desire and not mere accidents. The probability of the correctness of this view is increased by the fact that, in those cases of so-called desire which appear to be pleasurable or neutral, new psychoses are involved which are made up of emphatic elements other than the desire proper.

If such complexes as Prof. Sidgwick instances are to be called desires, then certainly psychology stands in need of names for the elements which we are able to discover in these complexes. Progress in psychology as in all other sciences must come with, if not through, definiteness of terminology, and there is danger that advance may be restricted by clinging too closely to common-sense significations of terms which have come into use previous to advanced analysis. If we cannot limit existing terms to the essentials of the complex states to which common-sense applies them, we must needs invent a more refined terminology.

If it be improper to restrict the term desire to states which contain the feeling of thwarting pain referred to, then we surely require a word to describe this special state, separable as it is by introspective analysis, but which has no term applicable to it in psychological terminology other than this very word desire.

One more point, I think, may be emphasised as possibly accounting for the differences between Prof. Sidgwick and myself. Prof. Sidgwick acknowledges that all desire is an "uneasy" state.

If, then, desires are pleasurable or neutral, he must hold that uneasiness may be pleasurable or neutral. This does not accord with my own experience, and I do not think it will be found to agree with the experience of the average man.

In closing, let me say that I hope never to be found using the mists of sub-consciousness as a shelter from objections; this one word of personal explanation seems to be required, and is, I think, sufficient reply to Prof. Sidgwick's question, p. 96, l. 4.

FEELING, BELIEF, AND JUDGMENT.

By J. Mark Baldwin.

In the review of my *Handbook of Psychology* in the last issue of Mind (N.S. No. 2, p. 272), Miss Lowndes touches upon a point or two of such importance that further discussion of them may be interesting, apart from my desire to be clearly understood. The nature of Feeling in general, and the relation of Belief to Feeling and to Judgment, are both problems of capital interest.

First, briefly, what is Feeling? For what follows, let us understand by Feeling simply *sensibility*, the amount, intensity, agitation, of consciousness. It is consciousness itself, a "first intension"—consciousness in its simplest expression, but consciousness as present, also, in the highest operations of knowing and willing. The mollusc—and perhaps the sensitive plant—does not know anything, nor will anything, but it feels.[1] As a matter of fact, we find that we feel differently during the predominance of different mental functions. When I am striving and straining, my state of feeling is very different from my state when I am listening passively to an uninteresting lecture, and both states differ greatly from such an emotion as anger. Now the second question which I wish to ask is this: how do we feel when we believe—when an article of faith is just becoming an article of faith?

As to the general theory of Belief, I must refer the reader to my book (ii. chap. vii.). What I wish to point out here is that after the elements brought out by analysis have been assigned to their proper categories (impulse, volition, presentation, &c.),

[1] This conception is clear enough, it seems to me, especially when viewed from the biological side. Yet Miss Lowndes charges me with limiting Feeling to egoistic Emotion (*loc. cit.*, p. 274). In saying that Feeling has "reference to self" (*Psychology*, i. 36), I do not mean, of course, the *presentation* of self; but simply the conscious area, the inner aspect, belonging to my organism. In the very same sentence, I say, "states of feeling may be entirely lacking in the presentation or knowledge element". Miss Lowndes' criticisms rest, for the most part, on evident misapprehensions such as this.

what is left over ultimately is a feeling-moment. There is impulse in Belief : all things believed belong to certain categories, have certain coefficients, toward which we feel, for consciousness at least, original impulses, and after which we consciously strive. There is likewise presentation or representation, usually both, in Belief; for we believe a content, an objective. But impulses, representations, and volitions might be present to eternity without Belief. Note the vegetative biological satisfactions of the new-born, our voluntary performances of organic functions, and, in a higher sphere, the objects of our ethical and æsthetic gratifications which remain largely a matter of uncritical and unreflective presence—what I call reality-feeling. We stumble upon the beautiful and the good, and they please us ; but their presence, and our gratification from their presence, do not afford us any criterion (coefficient) by which we may accept them as beautiful and good. Now, admitting that the acceptance, endorsement, ratification, of an objective is necessary to constitute Belief, shall we call it Judgment with Brentano, and on the strength of its priority, make Judgment a mental category co-ordinate with Presentation (*Vorstellen*) and Feeling ; or shall we attempt to analyse it farther ?

The need of such an analysis is seen in the conflicting views of Judgment, logical and psychological, now current. As it happens, in the same number of MIND (N.S. No. 2), reviews occur of two books which bring out the current divergence of view, *i.e.*, Erdmann's *Logik*, and Hillebrand's *Die neuern Theorien der kategorischen Schlüsse*.[1] Hillebrand accepts Brentano's view of Judgment and develops it in its logical bearings. This view is in my opinion undoubtedly psychological in two of its factors : (1) It emphasises an aspect of existential judgments which is not covered by the ordinary predicative theory ; namely, if existence is a predicate in the ordinary attributal sense, it must have a notional content of its own—it must be itself a content, an earlier presentative experience : an error which Kant refuted once for all in his criticism of the Ontological Proof. But the formal logicians (*i.e.*, Erdmann), reply : if existence is not a predicate, the distinction between presentation and judgment is subverted. This last is unanswerable, but it leaves unrelieved the acute strain between the psychological and logical views of the existential, which troubles the soul of Brentano. (2) The Brentano-Hillebrand view does justice for the first time to the *unitary* or *conceptual* meaning of Judgment and Syllogism ; a point of view from which the formal " two-membered " doctrine of Judgment is the hollowest of mockeries. When I say *the dog is fierce*, my content is a single object, *fierce dog*—this much

[1] Reviewed respectively by Mr. Bosanquet and Miss Jones. In what I say of these two books I am depending upon the reports of the reviewers : I have not been able yet to secure the originals.

certainly, whether or no we go over to the existential view which says *the fierce dog is* is equivalent to the original statement.[1] Indeed, as I understand Brentano, he does not go over to the existential view, thus saving himself from the criticisms to which that doctrine is open, at the same time that he has cut himself off from a predicative doctrine by his unitary view of the judgmental content.

Yet it is curious to note how the logical progressus of doctrine may be reversed. Erdmann—as represented by Bosanquet—holds the predicative theory, yet maintains the unitary view properly belonging to the existential theory. This he does by upholding what may be called the *declarative*, as opposed to the synthetic function of Judgment. Here, I believe, Erdmann is right. As I have argued in my book:[2] "the essential feature of Judgment is this, that it sets forth, in a conscious contemplative way, the actual stage of the thought movement". But how easy it would be to reverse this chain of argument, and to say that because there is this declaration of relationship between parts of the objective whole which is the content of Judgment, there must have been originally more than one content, and Judgment, as a synthetic thing, precedes presentation and renders it possible.

The view of Judgment which is desiderated, therefore, should have the following features: first, it should find some way of holding that existence is a true predicate and yet not an attributal content; second, that the content of Judgment is a single concept; third, that reference to existence accompanies all Judgment; and fourth, that Judgment is declarative of results already reached in Conception. The first and third of these four points are essential in this connexion, and it is to meet them, and thus to reconcile the existential and predicative theories of Judgment, that I present the following considerations.

On the first point, the nature of the existence predicate, I think consciousness throws very clear light. Reality is at first simply presence, sensation, presentation; we have here the fundamental phase of affective consciousness, reality-feeling. There is no Judgment here at all, because there is no occasion for assertion. There is no acceptance of reality as such, because there is no category to put it into. But now let experience come in like a flood, let pleasures of gratification be succeeded by pains of want, let impulse seek its end, finding it here and losing it there; and amid the contradictions and reiterations, the storm and stress of the accommodation of life to the world, a few great relief-points begin to stand out in consciousness. They recur, they satisfy, they stand together, they can be found when wanted. They are not new as objects of apprehension; they are the same objectives as before. But somehow, after we have gratified our appetites

[1] *Cf.* my *Psychology*, i. pp. 285, 301.

[2] i. 283, 285.

by them, and have sought and found them, again and again, standing firm together, while other objectives have shifted, faded, and disappeared—then the mental part of us which envelops them becomes different. Our affective consciousness now assumes the colouring which we call Belief; that sense of acceptance, assurance, and confirmation which succeeds doubt and perplexity. Now this is Feeling; a feeling of the methodical way in which certain objectives manœuvre in consciousness, in contrast with the unmethodical way in which other objectives manœuvre; the feeling of a reality-coefficient.

This, then, is the primary meaning of Belief in reality or existence. It is a sense of the confirmed presence of an objective, as satisfying the demands of my conscious life. So far, Belief is not Judgment, and Existence is not an Idea. But as soon as such an objective gets labelled as real, gets pictured with this coefficient, then the declarative, assertive phase of consciousness arises, and the *S is* is born—a true predicative Judgment. What was before the feeling = envelope, so to speak, of the presentation, is now itself presented as part of the content. Hillebrand is right in saying that the idea of existence does not arise before, but in and through, the existential judgment.

In the existential predicate, therefore, what we assert is not a content for consciousness, but the feeling-category in which the S-content is enveloped in consciousness: the way consciousness feels in consequence of the presence of this particular content in it. This is, I think, the true explanation of the existential. It is a judgment, because in its declarative function it renders in intelligible form the endorsement which distinguishes Belief from simple presentation But the predicate is only a sign of this endorsement, not an added element of objective experience.

The other desideratum of our theory is now clearly in sight, *i.e.*, the presence of an existence-value always in Judgment. As experience broadens, our reality-coefficients are so well established as categories of feeling consciousness, that each presented content has its familiar envelope of Belief, its endorsement in kind—so familiar and natural that it is not formally asserted at all. And the new marks which accrue to a content in conception get declared in the ordinary "two-membered" form of judgment, all inside of a tacit (felt) reality-coefficient. The *is* of "the man *is* white" is, therefore, very different from the *is* of "there *is* a white man". The former is merely the sign of conceptual synthesis: the judgment might be true in any "world of reality," *i.e.*, of Adam Bede. The existence-value of the judgment is simply the environment of feeling which an accepted proposition carries with no indication of any particular kind of existence. But in the true existential ("there *is* a white man"), the feeling factor is taken up as a logical predicate, and the coefficient of reality (external existence) is declared. The *is* now expresses conscious ratification and declaration of Belief.

The employment of the belief criterion as a norm of classification of judgments[1] is, I think, fruitful in further confirmation of this general result. If we look at the belief-attitude of the mind in cases of assertion, we find two clear truths not brought out by the ordinary division of the Logics. First, the disjunctive is seen to be a categorical form of expression. The disjunctive form of P means that the same belief-feeling accompanies either of two or more declarations concerning S. It expresses the belief-value of the concept S as far as constructive experience of it (*i.e.*, the evidence) is of value for belief. With more evidence, the parity of P and P^1, as claimants upon belief, disappears, and the judgment takes the regular categorical form. Second, the hypothetical lies with reference to belief midway between the ordinary categorical and the existential. We may approach it from either extreme. For example, the judgment *if a is b, c is d* means that the same degree of reality, or belief-feeling, accompanies the conceptual synthesis *ab*, on the one hand, and the synthesis *cd*, on the other. But it does not determine, just as the ordinary two-membered judgment does not, the particular coefficient of reality belonging to either *ab* or *cd*. Or we may approach the hypothetical from the side of the existential, getting the hypothetical judgment of existence, *if ab exists so does cd*. In this case not only does the belief-feeling envelop both *ab* and *cd*, as before : but, farther, the particular coefficient of reality attaching in common to them both is now expressed. This last form of judgment is therefore, from our present point of view, the richest and most notable. In it we catch both Belief as felt coefficient, and existence as asserted predicate (*i.e.*, the reality-coefficient made object of predication).

The above account, it will be seen, gives ready explanation also to the negative existential judgment—a point of great difficulty to Herbart, Brentano, and Hillebrand—by saving the predicative force of the existence sign. Yet by the negation in this judgment, as now explained, no element of content is cut off from S; what is denied is Belief in the coefficient of external reality.

The element of Belief which accompanies all Judgment, described above as felt recognition of a reality-coefficient, gives us, in my view, the line of connexion between formal and material Logic—a connexion which logical theory greatly needs. The judgments A, E, I, O, can not be purely formal, nor can the syllogisms constructed from them ; for every S and P in each one of them has its belief-value—its reality-coefficient—and every actual case of inference means the development of concepts subject to the limitations of thought in that particular sphere of reality. This reference to reality is probably what Hillebrand is contending for in his doctrine of "Double Judgments," as far

[1] Suggested in my first edition, *Psychology*, i. 293 ff.

as I understood the brief reference made by his reviewer.[1] The truth of every conclusion rests upon the presupposition that the two premises have the same kind of reality. The syllogism:—

A is B
B is C
A is C,

to be valid, really requires belief that the proposition *If A is B and B is C, then A is C* applies to the particular elements of content in question. Without this presupposition[2] securing the same coefficient to both premises the conclusion would be false; as for example:—

All men who have died will rise again,
The man Romeo died,
The man Romeo will rise again.

The "man Romeo" and the "all men" have different coefficients of reality.

But I do not care to discuss logical points. Enough has perhaps been said to show that the doctrine that Belief is "Ideal Feeling" has psychological warrant, and helps us considerably in the theory of Judgment. Nor is it worth while to point out the points of divergence from Hume's doctrine of Belief: the points of similarity will be sufficiently apparent to students of Hume.

[1] MIND, *loc. cit.*, p. 279.

[2] It is by supplying this presupposition of Belief that the hypothetical syllogism arises, just as the hypothetical judgment arises from the supplying of the ground of Belief in the categorical judgment (*cf. Psychology*, i. p. 303).

VI.—CRITICAL NOTICES.

The Human Mind. A Text-book of Psychology. By James Sully, M.A., LL.D., Examiner in Mental and Moral Science in the University of London. Author of "Illusions," &c. Pp. xvii., 501, 390.

This book is exactly what it claims to be—a text-book. If we compare Mr. Sully's work with the *Principles* of Professor James we are impressed by the contrast between them. James' book teems with novelties of matter and of statement aggressively obtruded on the reader's attention. The chief aim of Sully, on the other hand, is to give a clear and full exposition of the net result of psychological investigation up to date, avoiding polemics as far as is practicable. We do not mean to imply that original matter is not to be found in Mr. Sully's book. In many places he makes a distinct advance on the work of his predecessors. But such improvements are quiet and unobtrusive. They do not constitute the leading feature of his book. In respect of arrangement Sully is immeasurably better. His work is a systematic whole, whereas it is scarcely an exaggeration to say that James' chapters may as well be read backwards as forwards or in any other order. In terminology also Sully has greatly the advantage. He does not bewilder us by making such words as *feeling* and *thought* mean anything and everything—*i.e.*, nothing at all. Mr. Sully's style is entirely wanting in the vigorous and vivid rhetoric so characteristic of Professor James. But it is more definite and accurate. Finally, Sully is much more self-consistent than James, who is so carried away by his consuming interest in each topic as it arises that he at times appears to forget what he has said in treating of other topics. In short, although James has written a great work he has not written so good a text-book as Sully.

Sully divides his book into five parts. Part i. discusses the aim and scope, the data and method of Psychology, and the physical basis of mental life. These topics are treated on the whole in a very satisfactory way. We must protest however against the statement that the assumption of an ego or subject is extra-psychological. The reason assigned is that the psychologist as such has to deal only with psychical phenomena, and that the ego only becomes a psychical phenomenon when it becomes a factor of Consciousness, that is to say, in self-consciousness. By parity of reasoning it would be better to deal with Association only at the stage in which the subject comes to reflect on the connecting links which determine the succession of his ideas.

The general order of treatment adopted by Mr. Sully appears to us to be on the whole the best both from a theoretical and a

didactic point of view. He deals successively with primitive psychical elements, processes of elaboration, and stages of production, in the case of Intellect, Feeling and Will respectively. Under the first head come sensations, sensuous pleasures and pains, primitive movements, and those psychophysical connexions which are predetermined from the outset by the nervous organisation of the individual. The elaborative processes are in the case of the intellect, Attention, Differentiation, Assimilation, and Associative Combination. In the case of feeling and of volition there is said to be a "double process" analogous to intellectual differentiation and integration. These processes and materials yield the products or developmental stages of our mental life, *e.g.*, the space perception, conceptual thought, the æsthetic and the moral sentiment, purposive action, character, and so forth.

Part ii. treats of materials and processes. Chapter vi., which deals with Attention, is clear, full and judicious. Attention is defined as "mental activity immediately resulting in a raising in point of intensity, completeness, and definiteness of certain sensations or other psychical phenomena, and a corresponding lowering of any other simultaneously presented sensations, &c.".

Mr. Sully brings out clearly and well the essential and universal importance of this process in our mental life, showing how it conditions the other elaborative processes of Differentiation, Assimilation, and Integration. The main deficiency in his treatment of the subject lies, we think, in his omission to discuss the nature of the operation by which we fix attention on general topics as distinguished from that by which we fix it on concrete percepts and images. Motor activity can be immediately effective only in the latter class of instances, as in calling up and detaining a mental picture. But we often by a distinct effort of will turn our thoughts to, or withdraw them from, such general topics as business, religion, the theatre, and so forth. What is commonly called collecting our minds mostly consists in a double effort of this sort, an effort to withdraw our thoughts from one class of ideas and to fasten them on another. Perhaps this appearance of attention to what is not an image, is illusory. But the question ought not to be ignored as it is by most psychologists. Dr. Ward's view of Attention as coextensive with the relation of the Subject to its presentations is barely referred to by Sully in a note. So far as the question is merely one of terminology it may perhaps be justifiable to dismiss it so. Dr. Ward's innovation in this respect seems to have little or no chance of general acceptance. But beneath the verbal question there lies a psychological question of far-reaching significance. The real problem is whether the Subject is essentially active in being conscious of an object. This is an instance in which Mr. Sully pays the penalty for his light-hearted dismissal of the "Assumption" of a psychological Subject. In consequence he is led to ignore a psychological problem of great importance.

Chap. vii. treats of the three processes of Differentiation, Assimilation, and Integration. This is an especially good piece of work. The distinctive part played in our mental life by each of these operations is well brought out, and their thorough-going interdependence is firmly grasped and clearly exhibited. It would, however, be a decided improvement to name the modes of consciousness correlated with these processes differently from the processes themselves. I should propose Discernment, Recognition, and Synthesis as appropriate terms. Mr. Sully rightly takes pains to distinguish between Discrimination and Differentiation. But he means by Discrimination definite Comparison, which is a much more specialised mode of consciousness than mere Discernment. The account of Assimilation is not altogether satisfactory. Two forms of this process are distinguished. The first is Automatic Assimilation, which consists in the "calling up by a present sensation of the trace or residuum of a past sensation (or sensations), which trace merges in or coalesces with the new sensation, being discernible only through the aspect of familiarity which it imparts to the sensation". The definition is certainly clear and precise. But it suggests two important questions which are not discussed by Mr. Sully. (1) In so far as the old sensation resembles the new, is the revival of its trace a distinct process from the coalescence of this trace with the new sensation, or ought we not rather to say that the emergence of the new sensation is identically the same process with the revival of the old? (2) Is exact repetition of an experience sufficient to produce recognition, or is the nascent excitation of differences distinguishing the past from the present an essential part of the process? These two questions are vitally connected with the problem of the nature and ground of suggestion by similarity. By Comparative Assimilation Mr. Sully means the conscious apprehension of a relation of likeness, which is rightly regarded as an explicit and definite form of the vague sense of similarity accompanying automatic assimilation. But this affinity between the two cognitions leads Mr. Sully to exaggerate the affinity between the corresponding mechanical processes. The process in the case of the definite apprehension of resemblance is rather one of integrative combination than of assimilation. The exposition of the conditions of retention and of the various processes of associative revival is very good. We must, however, take exception to the treatment accorded to the doctrine of psychical as distinguished from physiological Retention. This doctrine is not, as Mr. Sully implies, essentially connected with the conception of the mind as a distinct spiritual substance. The whole question may be treated as one of method. What actually takes place in the interval between production and reproduction is a problem which can only be solved in a complete system of Ontology. There are, however, two ways of symbolising what takes place: (1) in terms of material phenomena; (2) in terms of mental pro-

cess. It is contended that this last method possesses peculiar advantages, especially in enabling us to formulate the way in which persistent traces actively co-operate in determining the sequence of occurrences in consciousness, as well as the total mental state in each moment. This contention is ignored by Mr. Sully, as it is by other opponents of unconscious psychical processes.

We now come to pt. iii., which deals with the stages of intellectual development as products of the elaborative process discussed in pt. ii. Perception, Reproductive Imagination, Productive Imagination, Conception, Judgment and Reasoning are the leading heads into which the exposition is divided. The space-perception forms the most important topic included under the first head. The tactual perception of space is regarded as a product of two factors, *viz.*, muscular sensations proper and certain "discrete contact sensations which acquire spatial significance through association with movement". The essential importance of motor presentations as integral constituents of the space-perception is well brought out and defended against the theory of James, "that movement does not further the development of space-consciousness directly by contributing new psychical elements, but only indirectly by rendering more distinct the primitive local differences in the dermal (or retinal) sensations. On this point Sully agrees with Ward. But he rejects Ward's conception of a "local sign continuum". The contact sensations which acquire spatial significance through movement are according to him *discrete*, not continuous. He does not, however, urge any reasons in favour of this view, which seems to be in conflict with ordinary experience. When we lay our hand on an object, we cannot count the locally distinct tactual sensations received from it. It is even more obvious that this is impossible in the case of local differences in retinal sensation. Why then does Mr. Sully say that such local differences are discrete? The treatment of the various modes of tactual space-perception, such as the presentation of solidity and of the unity and plurality of objects, is luminous and satisfactory. The same praise can be extended to the account of the corresponding visual perceptions and of their connexion with the tactual. The interdependence of the perception of space and that of material reality is briefly referred to. It would be a great improvement if this point were fully worked out. It has not as yet received adequate treatment from any psychologist. The account of the presentation of material reality is good as far as it goes. But the subject ought perhaps to have been treated at greater length. The experience of resistance which is exclusively dwelt on is doubtless the most important point. But there are many contributory factors which should have been taken into account.

Ch. ix. deals with Reproductive Imagination. The distinction between percepts and images is carefully treated. Then comes

a detailed discussion of the Association of Ideas and of Suggestion by Similarity. Mr. Sully admits only one principle of Association, properly so called—that of Contiguity, and this he identifies with proximity in time. This scarcely coheres with the statement on p. 296 that "the process of association by the link of contiguity" may be regarded as "one of integration or totalisation" and "the last stage of the process that of reproduction or suggestion" as "a reconstitution of what was originally given as a whole by means of a recurrence of some of its parts only". If this be true at all it must be the essential truth, and the mere external proximity in time must be accidental and secondary. The main defect of Mr. Sully's general treatment of association is to be found in his failure to fully grasp and follow out to its consequences the conception of integration. He ordinarily speaks as if the only consequence of an association of *a* and *b* were a tendency on the part of *a* to call up *b*. But the full significance of the process can only be expressed by saying that *a* tends to call up *b* in the *same relation* to itself in which they were originally presented. . This point is of essential importance for a true understanding of the higher processes of thought. In spite of this defect, the account of the various conditions which determine the working of the law of contiguity is on the whole excellent. The representation of Time is discussed in immediate connexion with contiguous association. We do not think that Mr. Sully has thrown much light on this obscure topic, though he seems to be working in the right direction in assuming a unique and irreducible experience of time-transience, which is transformed by a complex constructive process into a distinct representation of present, past, and future, such as exists for the developed consciousness. It is a serious omission that no reference is made to Ward's view of intensity as the primitive element in our time-perception and of movements of attention as constituting temporal signs. This theory of temporal signs may fairly be regarded as the most interesting contribution to the subject since Herbart, and it ought not to have been ignored here.

Productive imagination is the subject of the next chapter. The general process of ideal construction, the distinction between its receptive and creative phases, the characteristic peculiarities of intellective, practical and æsthetic imagination, and the stages in the development of imagination, are successively handled in a luminous and instructive way. The account of the constructive process seems to us defective in one point. It seems to be implied that the appropriate filling in of the scheme or "draft image" in which all mental production is rightly held to consist, merely depends on suggestion by contiguity and similarity together with voluntary selection and rejection of the material so supplied. It ought, I think, to have been added, that the scheme itself profoundly modifies the train of suggestion, so as to produce congruent presentations, independently of voluntary selection and

rejection. If we compare Mr. Sully's description with what we know concerning the creative activity of a man of genius, such as Mozart, its inadequacy and its consequent inaccuracy become evident.

The last two chapters of the first volume treat of the processes of Thought—Conception, Judgment, and Reasoning. In chapter xi., after an excellent account of the processes of Analysis and Comparison, the doctrine of General Ideas is taken up. Here the main point considered is the use of names as general signs. It is rather difficult to make out what Mr. Sully's views are in regard to the vexed questions connected with this subject. On the whole, however, he seems to think that the essential function of the general name is to "thrust prominently forward and so secure special attention to certain common class-features contained in a particular image". Now to me this is unintelligible, for the simple reason that in general thinking by means of words I do not for the most part fix my attention on any images at all, except the words themselves. The solution of this difficulty which would probably be given by Mr. Sully is indicated on p. 425, where we are told that "just as in algebraic processes the symbols x, y, &c., though representing something, are used for the moment as if they themselves were the ideas they signify, so in much of our ordinary reasoning it is sufficient to attend to the relations of the names themselves, in order to carry out the process". We fail to follow this explanation. In algebraic processes, progress is possible because we proceed according to definite rules of operation. But what are the corresponding rules of operation in the case of language? Mr. Sully seems to imply that these are to be found in certain relations of the names themselves. What are these relations? They cannot be grammatical! On the whole we cannot regard this account of the part played by words in conceptual trains of thought as at all satisfactory. On the other hand, what is said about the part played by language in the first formation of concepts by the child is thoroughly good.

Chapter iv., which deals with Judgment and Reasoning, is perhaps somewhat superficial. There is, however, little in it that calls for adverse comment except what is said about belief. We are told that the term belief, in its intellectual aspect, "serves to mark off the objective attitude of ideation or of thought, or in other words the fact of its representativeness," and again that the "primal source of belief lies in the relation of representative ideation to actual presentation". Does this mean that thinking of what is not immediately present to consciousness is identical with believing? If this be so, how is it that the "reference of thought beyond itself" may be equally present in belief, disbelief and doubt? Suppose that I am hungry and desire to satisfy my hunger. In this case there is obviously "representativeness" of ideation. I do not actually experience the satisfaction I desire. But it de-

pends on circumstances whether I believe that I shall ever get anything to eat. That is quite a different matter from the representativeness of my idea of food.

We now come to vol. ii., which is divided into two parts, dealing respectively with Feeling and Volition. On the whole this second volume is decidedly superior to the first, and this is very high praise. There is however less in it which calls for comment just because there is less in it which provokes adverse criticism. Feeling is identified with pleasure and pain in the widest possible sense which can be attached to these terms. It is sharply and clearly discriminated from everything of a presentative nature, including organic sensation. The chief point in which we are compelled to disagree with Mr. Sully concerns the relation of feeling to attention. He apparently holds that a pleasure or pain can be an immediate object of attention. If this were so, what would become of the distinction between feeling and presentation? We can fix attention on the idea of a feeling, but not on a feeling as it actually exists. The discussion of the sensuous and ideational, material and formal conditions of feeling is very good and full. After this follows an account of its varieties and development. Mr. Sully is careful to explain that, strictly speaking, there are "only two varieties of feeling, the pleasurable and the painful," and that what makes us distinguish between hunger, thirst, fear, &c., is "to some extent the dissimilarity in aspect of feeling-characters themselves (intensity, temporal course), and still more the difference in sensational or other presentative materials with which the feeling-element is incorporated". In chapter x. the nature and development of "Emotion" are treated. Mr. Sully regards "corporeal resonance" as an integral part of the emotion itself, but he is not "prepared with W. James to view it as the whole of the emotion". This question ought perhaps to have been discussed more fully. The next two chapters treat of specific modes of emotion in their order. First come the specialised instinctive emotions, such as fear and anger; then the concrete representative emotions, under which head exclusive reference is made to sympathy in its various forms and phases; and lastly, abstract representative emotions, including the logical and intellectual feelings, the æsthetic sentiment and the ethical or moral sentiment. Passing over much interesting matter, we select for comment the two last topics. Sully is at his best in the analysis of the conditions of æsthetic pleasure. He distinguishes carefully the sensuous, the formal, and the associational constituents of beauty. Stress is laid on the importance of association; "dim recallings of feeling-coloured experiences, individual and possibly also racial, constitute an important part in the rich emotive effect of beautiful things". The doctrine that beauty is "essentially formal in its nature" is set aside as untenable and obsolete. We are disposed to think that Mr. Sully hardly does justice to this side of the question. We may

grant the importance of the sensuous and the associational factors and yet continue to hold that the formal is essential. Form of combination, besides being itself pleasurable, may also immensely augment the pleasure-producing efficacy of the elements combined. This effect of form seems to be essential to properly æsthetic enjoyment. Take a case in which the associational factor is predominant. The beauty of an old romantic ruin may be largely constituted by the massive recall of a multitude of vague associations. But this peculiar mode of *massing* the associations, which seems essential to the æsthetic effect, may fairly be regarded as an æsthetic form.

Among the sources of the moral sentiment, Mr. Sully attaches primary importance to mere subjection to external authority. The peculiar sentiment of "oughtness" seems in "every case where it is distinctly recognisable to be developed by help of authority commands, and the correlative sanctions". His attempt to reconcile this view with the autonomy of the moral law on which Kant insists does not seem to us very successful.

In part v. the subject of "Conation or Volition" is taken up. "The most obvious general differentiating circumstance in all conative phenomena is, according to Mr. Sully, the presence of the psychical correlative of muscular action. Our consciousness of activity is based upon the common peculiarities of our muscular sensibility." This "active consciousness" is the essential concomitant of "voluntary process". But all the higher and more specialised forms of volition "involve not merely this psychical concomitant, but also a psychical antecedent in the way of consciousness of purpose or forecasting of end," for which the most comprehensive name is Desire. The relation of these two factors is somewhat vaguely treated. If desire is not a phase of "active consciousness," what is it? It is not feeling; though it is, according to Mr. Sully, always excited by feeling; but if it is neither feeling nor activity, it must be a fundamentally distinct mode of being conscious co-ordinate with these, and it ought to have been signalised as such from the outset. In order to remove this difficulty, it seems necessary either to entirely resolve that element in desire which distinguishes it from mere feeling and mere intellectual apprehension, into motor activity, or else to give up the attempt to exclusively identify "activity" with the "psychical correlative of the muscular consciousness".

The concrete development of will from the stage of primitive impulse to the pursuit of permanent ideals and higher forms of self-control is traced in a masterly and instructive manner. As against James it is rightly maintained that an ideo-motor action which takes place independently of desire must be regarded as non-voluntary. The higher phases of volition are analysed with care and accuracy, the explanation of the consciousness of freedom being especially good. We regret that space-limits forbid more detailed comment on this part of the subject.

The book is brought to a close by a chapter on "Concrete Mental Development," which deals in an interesting way with such topics as the unity of mental development, varieties of mind, scientific view of individuality, dreams, the hypnotic trance, and pathological psychoses, and various appendices mainly historical.

We congratulate Mr. Sully on having produced a sound, clear, and judicious work, which ought to prove of great value to students of Psychology.

EDITOR.

Les Altérations de la Personnalité. Par A. BINET, Directeur adjoint du laboratoire de psychologie physiologique de la Sorbonne. Paris: F. Alcan, 1892. Pp. viii., 323.

No volume, I suppose, which has yet appeared in the International Scientific Series has dealt with a branch of science so entirely new as that which is embraced by M. Binet's book on Alterations of Personality. Setting aside a few well-known cases long quoted as isolated marvels, but now falling into line with ordinary experiment,—I doubt whether there is a reference in the whole treatise to any authority more than ten years old. And yet one would think that the theme must have come home closely enough to men's 'business and bosoms' to have forced itself upon their notice long ago. And there is indeed in many minds a feeling that if all that Janet, Binet, and others are now urging were really true, we should always have known it;—that if in reality one phase of personality could succeed another so easily in the same organism;—if several personalities could coexist in the same organism, and express themselves simultaneously by different channels;—we could not have seen metaphysical speculation, and medical practice, and active life going on so long with scarcely a suspicion that they were dealing with an entity so fractionable and even factitious;—liable, at any rate, whatever its underlying unity, to disintegrate superficially in so many bewildering ways.

In answer to such demurrers it can indeed be shown that the phenomena now insisted on have cropped up almost unheeded in all ages. It can even be shown that considerable masses of them have been put on record at various dates within this century, but have been passed by with that rash contempt which refuses to examine well-attested facts, simply because it distrusts their first suggested explanation.

Only within the last few years, however, has a systematic attack been made upon these problems,—from two quarters:—in England in papers by the late Edmund Gurney and others, published in MIND and in the *Proceedings* of the Society for Psychical Research; and in France by a few able members of the large group of *savants* now studying hypnotism;—the most persistent

experimenters in the matter being M. Pierre Janet and M. Binet himself.

M. Janet's important work, *L'Automatisme Psychologique*, was appreciatively reviewed by the late Editor of MIND in these columns in Jan., 1890. But neither that book, nor the English essays on similar topics, have as yet succeeded in securing the most satisfactory proof of acceptance,—namely, the repetition by other inquirers of the experiments therein described. The appearance of a handbook to this subject is therefore needful and opportune ; and M. Binet's admirable lucidity of style, and his large personal share in the experiments described, point him out as an excellent author for such a treatise as the present.

'My intention,' he says in his preface, 'in writing this book, is not to prolong any discussion between rival schools. . . . I shall retain only the experiments which are repeated by all observers, and which always point to the same conclusion, whatever be the special object of the experiment. . . . We have before us a striking fact. A great number of observers, belonging neither to the same school nor to the same country, experimenting on different classes of subjects, with different ends in view, and often in ignorance of each other's work, are yet unconsciously arriving at the same result; and the result thus reached by various roads, and underlying a great number of mental phenomena, is a peculiar modification of the personality ;—a duplication, or rather a fractionation, of the Self. It is discovered that in a great number of persons, and under very various conditions, the normal unity of the consciousness is broken; several distinct consciousnesses are produced, each one of which may have its own perceptions, its own memory, even its own moral character. It is the upshot of these recent researches on modifications of the personality which I here propose to describe.'

M. Binet's work is divided into three parts. The first part treats of *successive* personalities, in spontaneous or induced somnambulism ; cases, that is to say (of which Félida X. furnishes the best known type), where two or more conditions follow one upon the other, but do not coexist in any readily perceptible manner. There is not, indeed (nor does M. Binet, I think, mean to assert that there is), any clear line of demarcation between these *alternating* personalities and the *coexisting* personalities which he discusses in his Second Part. Even in such cases as that of Ansel Bourne (which M. Binet does not quote), where the secondary personality seems to have been an absolutely transitory phase, it may be revived (as Prof. W. James showed) by hypnotism ; and if that personality is in reality persisting below the surface, there is always the chance that appropriate artifices may bring it by moments to the surface even while the primary personality maintains its sway.

It is in this ingenious detection of *coexisting* personalities that M. Binet's own work has principally lain. Like M. Pierre Janet, he has found that the most convenient conditions for splitting up the personality into several fractions are afforded by hysteria ;—which is in fact the vague and unsatisfactory name which we are

forced to give to a whole group of disintegrations below the level of ordinary consciousness,—a disease, as I have elsewhere termed it, of the hypnotic self. It is curious to note the change which these last few years have seen in the way in which hysteria is regarded. A generation since, it was enough to call any phenomenon 'hysterical' to imply that it was a nonsensical fraudulent thing, *ipso facto* beyond the scope of an honest man's inquiry. *Now* the hysteric, by a turn of the wheel, is exalted into a kind of arbiter of psychical fashions,—outside of whose realm, as some authors would have us believe,—every phenomenon is in some way dubious or abortive,—*fruste*, or *mixte*, or *suspect* or *larvé*. This exaggerated cult of the hysteric must soon pass away; and the solid advantage will remain that *savants* have discovered that they are needlessly timorous if they leave a human phenomenon unexplored for fear lest the human creature concerned may trick them. Let them take their chance of a few mystifications at the outset; in the long run steady scientific inquiry must cancel these isolated frauds and come by wide comparison to a safe result.

It is characteristic of hysteria to produce contractions, paralyses, anæsthesiæ, which, though real enough in themselves, result from no organic lesion, no absolute destruction of faculty, but rather from the withdrawal of certain powers of nervous co-ordination from the dominion of the ordinary self; those powers remaining, as is now found, evocable by artifices of several kinds;—though evocable no longer as factors in the main personality, but as forming nascent personalities of their own. Thus the hysterically anæsthetic arm can be made to write, and what it writes will be unknown to the primary personality, and may include (for instance) facts which the primary personality is vainly endeavouring to remember (p. 176).

Particularly curious are the experiments illustrating *unconscious sight;* the persistence, throughout hysterical amblyopia, of a subliminal recognition of objects as complete as before.

'Close the better-seeing eye of a hysteric,' says M. Binet, p. 120, 'and place before the worse-seeing eye a series of words in diminishing type, some of which the worse eye cannot read at that distance. Then place a pencil in the subject's hand; and the pencil will often write, without the subject's knowledge, certain of the words thus found illegible. The employment of automatic writing thus shows that the subject [although looking through the worse eye alone] does continue to perceive the letters. All that the opening of the better eye effects is to make that perception a conscious one.'

M. Bernheim, in an article to which M. Binet hardly does justice (*Revue de l'Hypnotisme*, Sept., 1886, p. 68), had already ingeniously shown that the amblyopia and the achromatopsia of hysteria and of the hypnotic trance are of purely psychical origin. French observations upon personality have mainly been made upon the hysterical subjects whom their great hospitals provide for the *savant* in enviable profusion. But it is fair to M. Binet to point

out that he has avoided a premature assumption from which M. Janet's work is not free,—namely, that the very existence of any of these automatisms, or dissociations of personality, is in itself an indication of hysteria. On the contrary, he says (p. 197), that 'it has now become a commonplace (il est aujourd'hui devenu banal) to remark that most of the experiments made upon hysterical patients can be repeated with results nearly equivalent, though diminished, upon healthy subjects; and that consequently hysteria, whose intellectual disturbances have been studied with special predilection by contemporary French psychology, should be considered as a reagent rendering more conspicuous certain delicate phenomena which are found also in normal life'. To those Englishmen who have long contended for this wider conception of automatism it is gratifying to find that what was a year or two ago condemned as a paradox has by this time become a truism instead.

And there are signs, too, that M. Binet—in a greater degree, perhaps, than any French writer who has preceded him—is becoming aware of the delicacy of perception, the complexity of intelligence, which we must needs attribute to the subliminal consciousness. This is first brought out (pp. 125, 191) by the singular tactile hyperæsthesia often existing in those surfaces of a hysteric which are anæsthetic for her primary self; so that M. Binet believes that he has calculated 'that the unconscious sensibility of a hysterical subject is at certain moments fifty times more delicate than that of a normal person'. Still more markedly do these subliminal powers come out in the 'modifications of personality induced by suggestion' which form the subject of the Third Part of M. Binet's book. This division, although convenient, is not quite logical; since the automatic writing, for instance, with which this Third Part is largely concerned, is perhaps as often a spontaneous as a suggested phenomenon. The problem as to the degree and the source of the intelligence shown in automatic script is, perhaps, of all those laid before us the most complex and important; and it is the more needful for me to touch on it here inasmuch as both M. Binet (p. 299) and M. Janet ('Le Spiritisme Contemporaine,' *Revue Philosophique*, April, 1892, p. 419), while mentioning me by name as having explained the great bulk of automatic writings as originating within the writer himself, and involving nothing more than a dreamlike rearrangement of facts already known, have omitted to state that I have published in the *Proceedings* of the S. P. R. a number of automatic messages, oral and written, which do in my view provably contain information not acquired by the automatist in any normal manner; but acquired at any rate by telepathic transmission from other living minds, if not by penetration into or commerce with some source still more unexpected or remote. Thus much it seems needful to say; but I do not mean that it was incumbent upon M. Binet to discuss at length even so fundamental a question as this. He is avowedly

dealing with those matters only on which the consensus of experts is already tolerably complete; nor can any one look for finality in the first handbook of a fresh branch of science, or suppose that ten years' work can bring us within sight of the terminus of any new-found pathway into the unknown.

The conclusions to which all the experiments taken together do plainly point are already weighty; weighty enough, as formulated in M. Binet's closing words, to prompt both physiologist and psychologist to something more of energy than they have yet shown in the collection and analysis of these obscure messages from the unsuspected depths of our being.

'It remains,' he says, 'to indicate the most important conclusion to be drawn from these studies. That conclusion concerns the limits of consciousness. Until now it has commonly been assumed, that consciousness indicates its own limits, and that where it seems to end nothing is left save physiological processes. Thus the nervous activity of each of us would consist of two kinds:—the one luminous, aware of itself; the other blind, unconscious, and confined to material changes, fulfilling themselves in the cells and fibres of which the nervous centres are composed. Upon this basis many hypotheses have been built;'—among them the hypothesis of unconscious cerebration. 'But this hypothesis rests only on the testimony of our consciousness; and that testimony should be regarded as subject to grave suspicion. We have pointed out that forgetfulness is often a purely relative thing,—true only of one particular mental condition, and not of another. We have seen that unconsciousness may exist only in regard to one phase of personality, and may disappear for another synthesis of personal elements. In a word, there may exist, in the same individual, a plurality of memories, a plurality of consciousnesses, a plurality of personalities; and each of these memories, of these consciousnesses, of these personalities, is aware only of that which passes within its own special realm. Outside of our habitual consciousness, there may exist within us conscious thoughts of which we know nothing. At present it seems impossible to determine the nature, the importance, the extent of these consciousnesses. It may be that consciousness is the privilege of certain special psychical acts alone. It may be that it extends through every part of our organism. It may be that it accompanies every manifestation of life itself.'

Significant as such speculations as these may be, they stand by their very nature at the first threshold of the new inquiry. The communications or messages between different phases of personality —different strata of the self—to which this remarkable book has introduced us, have corresponded as yet to the trivial phrases by which operators at the two ends of a cable assure themselves that the electric current is duly transmitted. Communication once established, news will follow; and those who know most of the messages even thus far received will be the slowest to set anticipatory limits to the area from whence that news may be drawn, or to its eventual import to men.

FREDERIC W. H. MYERS.

La Caractère de l'enfant à l'homme. Par BERNARD PEREZ. (Bibliothèque de philosophie contemporaine.) Paris : Alcan, 1892. Pp. iv., 308.

M. Perez points out in his preface that this is the first attempt at an Ethology published in France, and although ill-health has prevented the author from producing a work in harmony with his own ideal of perfection, yet "such as it is," he modestly says, "it will perhaps be useful in indicating the path to be followed—or shunned—by those who come after me, and who have more talent and leisure and strength to complete their work". The work will be welcomed by psychologists, not only for the fine observations which it contains, but also for the reason which the author draws attention to: that it enters a fresh field of investigation. For in this work M. Perez breaks new ground, or at least ground which has for a long time been allowed to lie fallow. By earlier writers, both medical and psychological, the differences of individual character were investigated and reduced to one or other, or to a combination, of the four temperaments. This classification, due to Hippocrates and Galen, lingered long after the weakness of its physical basis was seen by those who used it. The terms Sanguine, Choleric, Melancholic, and Phlegmatic served well enough to describe certain striking differences of individual character; and although blood and bile and phlegm might have nothing to do with them, the physiologist was, and indeed still continues, unable to substitute for the old hypothesis a satisfactory account of the organic conditions which determine those marked divergences of character. Till recently psychologists do not seem to have made an attempt to do so after a psychological manner. Another circumstance caused the doctrine of individual temperaments to be neglected. From the time of Locke—or even of Hobbes—in England, and from the time of Condillac in France, empirical psychology laid stress on the initial similarity of all individual minds. To begin with, individual minds were only individual nonentities, and their similarity only the identity of zero with zero. From without—through experience and education—came all the circumstances which made one man differ from another. There were no inherited differences characteristic of the individual, which it was difficult for education to modify. The doctrine of temperaments was accordingly discarded, or, if anything was left of it, it could only be that different surroundings and training left different results upon the individual. But only a foregone conclusion could lead to the view that these differences were entirely due to circumstances and not inherited—innate in character. And it is natural that psychologists should now return to the investigation of their nature and causes.

Lotze and Wundt, amongst recent psychologists, have already done so; and both have made use of the old fourfold classifica-

tion of temperaments: although, for Lotze, this is little more than the framework on which his fine observations are hung, and he supplements it by a careful analysis of the mental conditions from which such differences of character arise.

M. Perez has no doubt judged wisely in disregarding a classification which is without scientific basis. His book is "a modest contribution to the psychology of characters"; and character "is not an amalgam of elements differing in number and degree," but rather "an equilibrium, more or less unstable, of forces which exist at least virtually in a given organisation. As in mechanics, we seem able to indicate, at least approximately, the direction and therefore the intensity of the more important of these forces" (p. 3). Character, or moral personality, is, says M. Perez (p. 22), expressed in movement; and accordingly "a minute study and rigorous classification of the different forms or combinations of movements would represent an exact scheme of all the possible modifications of character". From these certain general modes may be selected, and therefore "neglecting all the other qualities and general forms of movement," he singles out three: quickness, slowness, and intensity ("*l'énergie intense, ou l'ardeur*"). As quickness and slowness are simply different degrees of rapidity, the author appears to me to be incorrect in holding that his division has "nothing in common" with Wundt's, which is based on "the twofold opposition: one relating to the strength, the other to the rapidity of change in mental movements" (*Physiologische Psychologie*, ii. 422).

At the same time the author's classification seems intended to have a more general application, and is not like Wundt's in the interests of the old fourfold division. Indeed, M. Perez avoids a fourfold classification by keeping distinct the two opposed degrees of rapidity—quickness and slowness—and by refraining from distinguishing Intensity into the two degrees, opposed in a corresponding way, of strength or weakness. To his three elementary modes he adds two others by combining intensity first with quickness and then slowness; and to these he adds another mode in which the three elements are in equilibrium. Thus six types of character result: Quick, Slow, Intense, Quick-Intense, Slow-Intense, and Balanced.

One objection to this classification M. Perez notices. The different mental movements of an individual may be distinguished by very different degrees of rapidity or of intensity. Thus some minds classed as slow may be quick in some respects—in perception or in imagination or in decision; other minds classed as quick may yet be slow of speech or of sluggish imagination; and so on. The objection is by no means fatal. For the classification is a classification of types, and is not rendered invalid by the variation of individuals from the type: though it is important to ascertain the amount of this variation.

It is of more consequence to notice that the classification pro-

ceeds upon the assumption that the fundamental distinctions of character are merely quantitative: they are simply variations in the rapidity and in the force of movements. How, then, is even the direction of the movements to be explained? It is clear, as M. Perez of course admits, that the origin of pride, anger, benevolence, &c., cannot be deduced from any combination of rapidity and intensity of movements. But the question is: Do these latter distinctions account for one man having a predominant tendency to pride, another to humility, for one man showing benevolence when another feels only for himself? Such feelings are indeed said to be "modified in important ways" (p. 24) by the elements of difference admitted by M. Perez as fundamental in character. But he does not assert that these differences are sufficient to account for one man being proud, another humble, &c.: although a good many passages in his work point in this direction; and the assertion would be necessary to establish the sufficiency of his principle of classification.

After the short chapter which explains his classification of characters, M. Perez proceeds to discuss in detail each of his six types: and the six chapters devoted to this purpose are the most striking portion of his work. To the study of each type are added two illustrative portraits, drawn from life, in which the characters of two persons belonging to the class are analysed and their development traced.

The quick or lively are, he says, distinguished by rapid movements—in walking, prehension, and repulsion, in the tension of the features and other modes of expression, including writing and speaking. Rapidity may be united with force or feebleness, but great mobility limits the force and duration of movements; sensibility is weakened by dispersion; and the quick tend to be vain, presumptuous and affected, and, in general, superficial. It is important to remember, however, the different conditions which may lead to this rapidity of apparent movement. It may be due—perhaps is generally due—to want of deliberation; but a similar degree of rapidity may be the result when the power of reflexion is keen and quick: so that the same apparent result, as measured by rapidity, may be due either to a very slightly developed or to a very highly developed intelligence.

In this, and still more in some of the subsequent studies, it is difficult to see whether all the traits of character ascribed to a type are regarded as really deducible from the typical characteristic or whether some of them are only to be regarded as having been found coexisting with it in the typical individuals whose portraits illustrate the studies.

As rapidity and intensity are regarded as limiting one another, it is natural to look upon the Quick-intense as a transitional type between the quick and the intense. In this type the mobility of impression and emotion combined with tendency to persistence leads to a sort of recurrence and rumination of ideas, images,

sentiments and volitions. They are said to be more successful in ethical and logical construction than in æsthetic and literary, and yet to be seldom absolutely practical. They may have good sense, but are commonly inconsistent and only half serious; like the quick, they are imitative, but their imitation is deeper; they are credulous and even superstitious, especially if timorous by nature; their education and environment seldom leave them more than a "relative freedom," but it is difficult for them "to be truly dissembling, for to lie well there is needed much passion, energy, or wit in addition" (p. 59); and yet they have a "good facility for lying" (p. 57). Their voluntary characteristics are a composite, in varying proportions, of decision, inconstancy and persistence.

The Intense are described as showing commonly strong sensibility and powerful intelligence, but always with a certain tendency to confine their scientific interests within the sphere of personal inclinations (p. 88). They are born for action (p. 90). Egoism dominates their character. They are imperious even in their affections. Beneficence, honesty, modesty, are but the mask which covers an irritable and revengeful character (p. 86). "It is not that they always put their ego far above that of others, but this ego is impatient of all that crosses its path" (p. 87).

It is not necessary perhaps to follow in detail M. Perez's analyses of the Slow, Slow-intense, and Balanced types of character. Enough has been said to show the very great interest of the line of investigation upon which he has entered. The interest which comes from his method of working, illustrated as it is by the analyses of actual characters, can only be referred to here.

The remaining chapters of M. Perez's book deal with the reciprocal relations between various leading traits of character, emotional, volitional and intellectual. It is hardly necessary to say that they are distinguished by the author's well-known power of delicate psychological observation. But it is the earlier portion of the work which is of chief importance from the original and suggestive contribution which it makes to the study of different types of character.

W. R. Sorley.

VII.—NEW BOOKS.

By Various Hands.

Essays on Literature and Philosophy. By Professor Caird. Glasgow: Maclehose, 1892. 2 Vols. Pp. 553.

These volumes contain three essays which fall strictly within the range of philosophy, and five essays upon the genius and work of Dante, Goethe, Rousseau, Wordsworth, and Carlyle. Any criticism of the last-named essays would here be out of place, and it may be sufficient to say that they ought to be read by all philosophical students of literature. Of the metaphysical essays, that on Cartesianism is an admirable example of philosophical exegesis. It deals first with Descartes himself, exhibiting with prominent emphasis how much his system is wrapped up in his Idea of God, and how important is the function which this Idea has to discharge in his effort to unify what he had too widely put asunder. The peculiar development of Cartesianism in the hands of Malebranche is sketched next, with its tendency to Asceticism and Mysticism: and then follows a singularly clear exposition of the development given to it by Spinoza. The title is, of course, too comprehensive for the extent of ground covered, and as the article was published in 1876, it might have been enlarged to cover the other offshoots from the Cartesian stock, or been kept in hand until this was done. A similar estimate of Leibnitz and of Locke in relation to Descartes would at any time be welcome from Professor Caird.

The essay on Metaphysics is hardly what would be expected from an article in an Encyclopædia, were it not that the editions of the *Encyclopædia Britannica* have accustomed us to *ex parte* deliverances in place of comprehensive summaries. It is quite dogmatic, and makes no pretension of being anything else. The thinkers on whose side the writer stands are set in high places, while others are brought up only to be summarily condemned: there is neither general history nor conspectus of the situation at the time of the issue of the article. What we have, however, is of first-rate quality, and of great practical value as a masterly display of the metaphysical views of a leading thinker of to-day: a clear, well-arranged and massively-expressed exposition in brief of a definite philosophy. It is superfluous here to enter into detail. Professor Caird's position is well known. In the essay he states the general problem of metaphysics as set by Aristotle, and divides the subject into four branches: its relation to Science, to Psychology, to Logic, and to Theology. Professor Caird explicitly places himself as a disciple of three great masters—Aristotle, Kant, and Hegel; he states the views of each with critical elaboration of the fundamentals; he shows the deficiency of the earlier master, and its emendation by the later, and the deficiency still left when all three had passed, and thus himself indicates that he considers that his metaphysics not only sums up, but goes beyond them all. A mind which has assimilated the achievements of these cardinal thinkers must itself be strong in its capacities, and the assimilation has issued, as is well known and here is plainly exhibited, in great intellectual vigour and penetrating insight. Expressed as it is in free use of technical terms, and still more, of technical notions, the essay is not an introduc-

tion to the subject, and indeed would be unintelligible to any but somewhat advanced students ; but for such it is admirable, and cannot fail to make a permanent impression on readers, whether sympathising or antagonistic. The omission of all reference to Lotze, especially in several places where he seems almost suggested, and the approach to an encumbering with detail in the treatment of Kant, are signs that the essay as it stood in 1883 might with advantage have been recast a little in 1892. The close of the essay is somewhat tame, considering the opportunity for indicating what Professor Caird from his high standpoint would consider the present situation of philosophy and its immediate prospects. But as a matter of fact this is done in an essay in the first volume—*The Problem of Philosophy at the Present Time.* In this Professor Caird, in a somewhat more popular way, indicates the increasing difficulties which our advance in knowledge of man and of nature places in the way of universal synthesis. In this, as in all the essays, Professor Caird has deeply at heart the function of religion, and especially of Christianity, in its relation to philosophical speculation; and he ends in ascribing to philosophy a vindication of the religious consciousness, and to Christianity the illumination of 'the idea of the unity of man as spiritual with an absolute Spirit'. He recognises with his three great leaders at once the finitude of man's rational capacity, and his power of rising above it by his very consciousness of limitation.

The Spirit of Modern Philosophy. An essay in the form of lectures. By Josiah Royce, Ph.D., Assistant Professor of Philosophy in Harvard University. Boston and New York: Houghton, Mifflin & Co., 1892. Pp. xv., 506.

This work is the outcome of a course of popular lectures in which the author undertook to exhibit, apart from technicalities, the development of modern speculation in relation to the fundamental problems of life. He has accomplished a somewhat difficult task in an admirable manner, and has given us a most lucid and brilliant account of certain aspects of modern philosophy, though of course without any attempt at completeness or minuteness of detail.

The book is divided into two parts: the first consisting of the historical review, while in the second the author makes his own "Suggestions of Doctrine," indicating the views to which he has been led by a study of the history of philosophy. Dr. Royce recognises two stages in the pre-Kantian philosophy: the first, a period of Naturalism pure and simple; the second, a kind of new Humanism, for which the inner world of man's soul is the centre of interest. The traditional beginning of modern philosophy with the "Cogito ergo sum" of Descartes is discarded, as likely to produce a false impression of subjectivity in the first period. Accordingly a start is made with Spinoza, the religious aspect of whose philosophy is well brought out. Under the title, "The Rediscovery of the Inner Life," we have a rapid survey of the English development from Locke to Hume, leading up to Kant as the initiation of the third period of modern philosophy. Dr. Royce himself signalises his neglect of Leibnitz as the most serious error of omission in his book, and it is to be regretted that he felt compelled by his limitations of space to pass over this thinker, both on account of the influence of the Leibnitz-Wolffian Dogmatism upon Kant, and of his importance as the representative of a tendency in speculation which hardly receives adequate recognition from our author. The lecture upon Kant is that

which appears to me to be the least satisfactory in the series. The standpoint throughout is that of Kant's idealistic successors rather than that of the critical philosopher of Königsberg, a mode of treatment which has done more than anything else to obscure the true significance of his work. It is indeed admitted (Appendix B) that a thoroughly consistent interpretation cannot be made from this point of view; but "the undeveloped Kant" whom Dr. Royce recognises is a Kant who regards the forms and categories as so many instruments with which I start equipped and which I apply to the data of sense merely because "it is my nature to". The historical Kant, however, once for all accepted Experience as a fact, and sought to determine its most general conditions and to show the necessary implications of these in the whole. He attempted neither to deduce it from idealistic presuppositions nor to explain it by means of subjective faculties. The statement of the second Antinomy (p. 123) is somewhat misleading. It was not concerning Space and Time themselves, but concerning the world in Space and Time, that Kant found such perplexing and suggestive difficulties. The account of the post-Kantian development, from Fichte to Hegel and Schopenhauer, is altogether admirable, and may safely be recommended as the best that has yet been given to English readers. Especially happy is the treatment of Hegel, in which the origin of the dialectical movement in what Dr. Royce terms "the logic of passion" is brought out. In the concluding chapter of the first section the connexion of the historical method and of the historical conception of evolution with the romantic movement in literature is shown.

Of the "Suggestions of Doctrine," in which our author attempts to make his own synthesis, only a brief indication can be given, though they would well repay careful consideration. A careful statement is given of the case for what is commonly known as Absolute Idealism, but Dr. Royce evidently regards as of greatest novelty the argument developed in chapter xii. The distinction is first drawn between the *describable* and the merely *appreciable* and incommunicable. The world of description, with its abstract and universal forms and categories, is the real world of physical science. This is then shown to be an inadequate view of reality. We can only describe what has first been appreciated. Moreover, the objectivity which we must attribute to other selves and to their appreciations, though no place can be found for these in the world of description, implies the existence of real spiritual relations between us or that we share in the organic life of the One True Self. The world of appreciation is therefore deeper than the world of description, and we have here a reconciliation of physical law and moral freedom. In the concluding chapter on "Optimism, Pessimism, and the Moral Order," the easy optimism which ignores or denies the existence of evil is severely condemned; its antagonism to morality and its connexion with pessimism are also exhibited. Dr. Royce seeks to reconcile the reality of evil in the finite individual with the supremacy of the moral order by means of the view that the holiness of the Infinite Self consists just in condemning and triumphing over this evil of the individual, as human virtue consists not in the absence but in the conquering of evil impulses. There are many problems connected with the questions which Dr. Royce discusses, such as that of the relation of the finite to the infinite Self, which, as he is well aware, are far from being solved; but his contribution to their solution cannot be denied to possess the claim which he makes for it, namely, that of suggestiveness.

The Grammar of Science.. By KARL PEARSON, M.A., Sir Thomas Gresham's Professor of Geometry. London : Walter Scott, 1892. Pp. xvi., 493.

The following brief summary of Prof. Pearson's teaching will fitly introduce our critical comments. There is no legitimate field of inquiry that is not subject to the scientific method, *viz.*, the classification of facts and the establishment of formulæ describing the relations between these facts ; or "the expression in conceptual formulæ of the routine of sense-impressions". The possibility of such formulation probably depends on the *selective* nature of the perceptive faculty. In the routine of sense-impressions there is no inherent necessity ; the only necessity we know is in the sphere of conceptions. Proof in the field of perceptions is only overwhelming probability. As for perceptual Space and Time, *each* is defined to be the mode by which we distinguish sense-impressions having the same position as regards the other. Such *concepts* as geometrical surface, atom, and ether are only valid as shorthand methods of describing the correlation and sequence of phenomena. Motion, as a mixed mode of perception, can be conceptually analysed by Geometry. The *Matter* that is said to *move* can only be conceived as a geometrical ideal, and the laws of motion thus constitute a conceptual model enabling us most accurately to describe the sequences of our sense-impressions.

It is not easy to characterise the author's philosophical standpoint. The word "sense-impress" figures largely throughout the exposition. But we cannot gather what sort of entity this sense-impress may be. Of course we have in the first place to understand it to be an object having relation only to an individual subject, *viz.*, to the 'I' that am conscious. But the reader suddenly finds himself carried away from this simple solipsistic sensationalism to the regions of physiology. In the nervous system these sense-impressions may exist without consciousness : and the consciousness which is my only immediate certainty is found to be conditioned on brain-processes which exist for me only as "constructs". The sense-impression has, therefore, somehow to be conceived in terms of matter and motion, as a physiological material reality. But this is not the only ambiguity. Prof. Pearson suggests that the human perceptive faculty is a great sorting-machine, which chooses some and rejects others of the sensations which flow into it. Such language obliges us to conclude that the realities amongst which the scientist really feels at home are not after all the psychological presentations of the individual consciousness, but entities objectified into independence of any and all individual subjects. The fact is that Prof. Pearson, the Scientific Reformer, is not in harmony with Prof. Pearson, the Philosophic Nihilist. His account of the Laws of Motion contains many useful and suggestive improvements on the older statements of Physicists. But the clearness with which these are conceived depends on an entire reversal of the Sensationalism of Prof. Pearson's philosophic standpoint. We should have wished that the author, instead of vehemently assailing the "Metaphysicians," had developed a more penetrating and independent analysis of scientific conceptions, inferences, and methods. From the chapter on Space and Time we can learn nothing about these entities but what might be equally well applied to the general qualitative discriminations of sense. Neither do we understand why phenomenal reality is denied to Space and Time, unless it is to be understood as *affirmed* of something else. Yet it is not *Matter* of which phenomenal reality is affirmed : and the only help we get is the dictum (p. 50) : "The reality of a thing depends upon the possibility of

its occurring as a group of immediate sense-impressions". Neither does the distinction between conception and perception throw any light on the question. On p. 115, in speaking of the *atom*, Prof. Pearson writes: "It may pass from the ideal stage to the real; but till it does so, it remains merely a conceptual basis for classifying sense-impressions, it is not an actuality". We should suppose from this passage that a concept is a *problematic sense-impression*, and yet it seems impossible to understand how a *problematic* sense-impression has any better title than an *actual* sense-impression to serve "as a basis for classifying sense-impressions". Of course, Prof. Pearson throughout follows the example of his school, and unconsciously treats the "sense-impression" as the thing-in-itself, having a being independent of any relation to aught else. This is most clearly brought out in his Chapter on Life, where he states the problem to be: "What groups of sense-impressions do we classify as living, what groups as lifeless?" (p. 400). He thus glides with serene unconsciousness into a purely realistic—if not materialistic—mode of speech. We have some confidence that Prof. Pearson is capable of writing a more coherent and profound treatise on the Logic of Science than this crudely conceived and hastily elaborated volume.

The Hibbert Lectures, 1891. *Lectures on the Origin and Growth of the Conception of God as Illustrated by Anthropology and History.* By Count Goblet D'Alviella, Professor of the History of Religions in the University of Brussels. Williams & Norgate, 1892. Pp. xxi., 296.

The author regards this work as a continuation of his previous studies on "The Contemporary Evolution of Religious Thought in England, America, and India". He now investigates the gradual development of the forms of Religion there described, and their relation to the lowest manifestations of religious culture. Lecture i. is on the Methods of Research into the pre-historic manifestations of religion, and is a vindication of the Comparative Method of ascertaining Origins. Pre-historic archæology and folk-lore would give a meagre harvest of knowledge in regard to primitive beliefs, if we could not avail ourselves of comparative ethnography to supply explanatory ideas and hypotheses. These three sources of information may, however, yield identical suggestions, and then the method requires that the supposed primitive beliefs shall be shown to be connected without breach of continuity with the religious ideas and institutions of our own time. In lecture ii., on the "Genesis of the Idea of God," are discussed those psychical characteristics of primitive man out of which springs worship of nature and of the dead: the impulse to personify physical objects, the fear of things whose agency cannot be understood or controlled, the helplessness of the primitive mind to grapple with the problem of reaching causes by elimination, and the puzzle of a roving dream-consciousness side by side with the stillness of sleep.

From such beginnings sprang spiritism, fetishism, and idolatry. Personified objects allow their spiritual essences to quit them, and become independent powers; independent spirits may again incorporate themselves in an object, the fetish, and the fetish may be fashioned so as to reproduce the appearance of the spirit resident therein, and so become the idol. Lectures ii. to v. describe such a commencement and a continuation of development through graded conceptions determined by the known lines of intellectual and social evolution.

Differentiation of character among superhuman powers, grouping in

hierarchies, abandonment of Divine caprice, moralisation of Divine purpose, and, finally, unification of the Divine personality, become successively the tendencies of human thought, and are now successively accounted for by science. Finally, the author attempts to forecast the future of religious worship.

References are made to a wide and catholic collection of authorities.

The Philosophy of Locke in extracts from the Essay concerning Human Understanding. Arranged, with introductory notes, by JOHN E. RUSSELL, A.M., Mark Hopkins Professor of Philosophy in Williams College, New York: Henry Holt & Co., 1891. Pp. iv., 160.

The first to appear of a "Series of Modern Philosophers," edited by Prof. E. Hershey Sneath, of Yale University, the prime object of which is to meet the needs of students who have not time to read the complete works in which the leading philosophical systems are expounded. For this purpose the mere text-book with its brief *résumé* and exposition, itself an *interpretation*, of the various systems is insufficient. It is best for the student to come into *direct contact with the text of the author* studied, and to "make his own interpretation," thus from the outset doing first-hand work and his own thinking, and obtaining real training and knowledge. This series meets this practical difficulty, and at the same time accomplishes the desired end of bringing the student face to face with the original authors, by presenting "the substance of the representative systems of modern philosophy in selections from the original works," each volume containing in addition to the "selections" a short biographical sketch of the author, a brief exposition of his system and statement of its historical position, a bibliography, and (in Locke, and it is to be hoped in all the rest also) an index. Eight volumes, including Locke, are arranged for: Descartes, Spinoza, Berkeley, Hume, Reid, Kant, and Hegel. If these are successful, others "will probably follow". Prof. Watson's *Extracts from the Philosophy of Kant*, which appeared independently in 1888, and was noticed in MIND, xiii. 449, has been included in the series, which it may have suggested, an edition having been purchased for this purpose. With regard to Locke in the series it is sufficient to state that the selections seem to be judiciously made, and the attempt thus to give the substance of Locke's philosophy in his own words, so far as contained in the *Essay on Human Understanding*, successful. Prof. Russell, in his estimate of Locke's historical position, regards Kant in his critical philosophy as the legitimate successor of Locke, rather than Hume and the materialism of the French school.

It may be added that Prof. Sneath is also editing a similar series in Ethics to be published by Ginn & Co., Boston, Mass., U.S.A., and that arrangements have been made for the following volumes: Hobbes, Clarke, Locke, Butler, Hume, Price.

Psychologie du Peintre. Par LUCIEN ARRÉAT. Paris: F. Alcan, 1892. Pp. 320.

M. Arréat seems to think that the soul of art can be best approached through the soul of the artist. The texture of the fabric depends on the structure of the room. M. Arréat therefore enters into an elaborate description of the mental, moral, and physical idiosyncrasies of the workers in pictorial art. His book is divided into five parts: (i.) treats of the physiological habitudes acquired or inherited by those who devote themselves to the study of art—cerebral development, tempera-

ment, nervous susceptibility, and visual discrimination. These topics are treated in a genial gossiping manner with an abundance of biographical illustration vividly depicting the most salient characteristics of renowned artists. We are not surprised to find that artistic talent is hereditary, and that in a vast number of instances cited by our author the progenitors of a great painter have shown more or less aptitude in æsthetic construction. Part ii., entitled "La Vocation," deals with the special psychic conditions most favourable to the development of artistic excellence. Of these memory or representative imagination is the most necessary factor, and in the power of reproducing perceived impressions M. Arréat finds two elements: "the motor element and the visual element" (p. 55). In this connexion our author has some pertinent remarks on the distinction between the play of normal and that of hallucinative imagination. He thinks that they shade insensibly into each other, and that an exaggerated power of mental vision has often ended in insanity.

Parts iii. and iv., pursuing the same line of discussion, broaden out into a more general consideration of the mental and moral traits of the artist and the influences of his environment—religious, social, national, domestic.

Part v. notices the weaknesses to which artists are especially liable, their tendency to melancholia, seeking relief in intemperance, and culminating in suicide. In conclusion, our author seems inclined to identify artistic genius with sympathetic power. The greatest genius is he who can touch most profoundly the springs of human emotion.

Condillac et la Psychologie Anglaise Contemporaine. Par Léon Dewaule, Principal du Collège d'Arras, Docteur és Lettres. Paris: F. Alcan, Editeur, 1892. Pp. 331.

In this treatise the author endeavours to exhibit modern evolutionist theories of psycho-genesis as having been developed from Condillac's doctrine, ascribing all mental products to a sensory origin.

The work is divided into *two* main portions, the one treating of the evolution of the individual consciousness so far as it consists of transformed sensations (le transformisme psychologique), the other of the evolution of communities, or the application made by Condillac of his principles to history and social science.

In part i. the following six topics are handled in as many sections: (1) The Germ, *i.e.*, Sensation. (2) The Evolution of the Understanding. (3) The Principle of Association in Mental Evolution. (4) Association and Evolution in Logical Operations. (5) The Evolution of the Active Powers and the Will. (6) Psychology of the Lower Animals.

M. Dewaule affiliates what he regards as the contemporary school of English psychologists to Condillac through the principle of the Association of Ideas, which, as M. Dewaule affirms, Condillac was the first to lay down as the mainspring of psychic process.

Of course, a Frenchman's estimate of a Frenchman is likely to be tinctured with some national bias, and the reader of this work must, therefore, be prepared to find the influence of Condillac given a somewhat wide range. Did not Condillac, asks M. Dewaule, draw attention to one of the chief problems of the modern psycho-physical schools, *viz.*, the perception of extension through local signs? Originally, writes Condillac (Traité des Sensations), "the statue was not conscious of any local distinctions in its own body. It seemed to itself to exist only at one point; in other words, it had no power of local discrimination. To

discover the place a pain occupied on its body it would be necessary to touch it with the hand." Here, then, says M. Dewaule, we have the idea of the well-known experiment with the compasses over different parts of the skin (p. 21). It is alleged that Condillac anticipated Spencer in tracing the faculty of memory to the subjective distinction between faint and vivid states of consciousness. Condillac also, it is urged, showed in almost the same terms as Spencer the relation between the function of memory and the structure of the brain, and explained how habit develops conscious into unconscious movement. Condillac even gives the same illustration as Hartley and Spencer, *viz.*, the case of a musician, the movements of whose fingers have at first to be carefully watched and guided, but, at length, become so automatic that a person can perform on a musical instrument while simultaneously attending to some other work (p. 75).

Condillac's Frankenstein was not endowed with innate ideas, and so far his teaching was in accordance with that of modern psychology. But Condillac's method left no place for inherited tendencies, the results of accumulated ancestral modifications, which play, according to modern evolutionists, such an important part in psychic development. It will be found throughout this work that the author has been so intent in crediting modern psychologists with obligations to Condillac that he has taken little note of the many and vital distinctions which separate the psychology of the eighteenth from that of the nineteenth century. If we follow him in taking Condillac and Spencer as typical representatives of psychologists past and present, it is easy to show that a vast difference separates their procedure. The method of each is *synthetic*, but synthesis with Condillac is something quite different from synthesis with Spencer. With Condillac synthesis is the accretion and aggregation of simple elements—as of each sense in his famous statue ; on the other hand, with Spencer synthesis is the process of tracing differentiation of function—the organisation and specialisation of the parts of an incoherent homogeneous totality.

Essai sur quelques Théories Pessimistes de la Connaissance. Par E. de Roberty. Paris: F. Alcan, 1892. Pp. 164.

This essay is a rather smart attack on the position assumed by the Agnostics, which the author holds to be insincere and untenable. It is divided into five chapters dealing with various aspects of professed *nescience* or intellectual pessimism. Chapter i. is an examination of the critical agnosticism of Kant, whom the author regards as the pioneer of modern scepticism. The distinction between noumenal and phenomenal existence is held to involve three capital unwarrantable assumptions: (1) that there is a reality beyond that experienced by human beings ; (2) that there may be modes of perception essentially different from the human ; (3) that our cerebral constitution reveals the world under a false aspect (p. 32). Why, if all knowledge is admitted to be *a posteriori*, should ignorance alone be postulated as *priori?* Ignorance may be the limit, but it cannot be the source of knowledge.

In chapter ii. M. de Roberty assails the professed nescience of the Positivists, which, he says, is the hypocrisy of Materialism as the critical philosophy is the hypocrisy of Idealism. The Positivists, he asserts, begin by regarding the universe as a table of weights and measures, and end with an ontology more abstract than that of Hegel or Spinoza.

Chapters iii. and iv. are occupied with a criticism of the Monism of Herbert Spencer and the Evolutionists. The doctrine of Mr. Spencer's First Principles, instead of being Agnosticism, amounts, it is urged, to a systematic dogmatism pure and simple.

In conclusion, M. de Roberty thus states his own epistemological standpoint: "Consciousness appears as a natural stenography of the Cosmos. But just as ordinary stenography is composed of a series of abbreviated movements substituted for a series of movements on a larger scale, so Cosmic stenography constitutes a veritable Algebra of the universe, which it symbolises. In both cases, the substitution can only become possible 'par l'identité de nature des choses représentées et des symboles représentatifs'" (p. 147).

Einleitung in die Moralwissenschaft. Eine Kritik der Ethischen Grundbegriffe. Von GEORG SIMMEL, Privat-docent au der Berliner Universität. Band I. Berlin: Verleg von Wilhelm Hertz, 1892. Pp. viii., 467.

Mr. Simmel's volume may be cordially recommended to all students of ethics who have got beyond the stage of text-books. To say that it is mature, luminous, well-arranged, and convincing would perhaps be going too far; but it is certainly acute, ingenious, subtle, suggestive, and almost uniformly interesting. The book is in four chapters. The first treats of the fundamental notion of "ought" regarded as an indefinable mode of thought or feeling, which reflexion on experience shows to be connected with a certain portion of the whole content of our thought, as the notion of real existence is connected with another portion. In the second chapter the notion of "Egoism," its antithesis to "Altruism," and the practical connexions and transitions between the two, are discussed, and "greatest possible realisation of will" is incidentally suggested as a fundamental principle of morality. In the third chapter the difficulties attaching to the current conceptions of Merit and Demerit—due to the peculiar implication of good with bad motives in either case—afford scope for the author's subtlety, and also for his tendency to paradox.

The longest and most important chapter is the last, on "Happiness," in which Utilitarianism is acutely criticised. Mr. Simmel, with sound instinct, lays stress on indifference to the *distribution* of happiness, as the characteristic of utilitarian systems which brings them—theoretically, if not practically—into conflict with common-sense. He suggests "maximisation of activity" as an end preferable to "maximisation of happiness". The chapter concludes with a critical discussion of five possible ways of conceiving the relation of virtue to the virtuous agent's happiness. Consideration is first given to the view that Virtue and Happiness are necessarily connected either (1) as two aspects of the same fact, or causally, Virtue being regarded as (2) cause or (3) effect of happiness. The author then discusses impartially the opposite Pessimistic view that adversity in this mundane sphere is the natural lot of the virtuous, and prosperity of the vicious. Finally, he considers (4) whether the connexion of Virtue and Happiness can be established for the individual in a more indirect way, either through the notion of Beauty, or—as is more commonly thought—through the intermediation of religion. The author's own conclusion is that we must abandon the effort to establish any simple and constant relation between the two notions or facts.—H. SIDGWICK. (Full notice will follow in due course.)

Eine neue Darstellung der Leibnizischen Monadenlehre auf Grund der Quellen. Von EDUARD DILLMANN. Leipzig: O. R. Reisland, 1891. Pp. x., 525.

Circumstances have delayed, and must still a little farther delay, notice of this elaborate piece of work. It is the production of a man who certainly has studied his author, and who also is of opinion that nobody before him has been able to lay hold upon the true Leibniz. Whether he is right where he departs from current interpretation of the philosopher (which he finds at its best in Zeller's *Gesch. d. deutschen Philosophie*), and whether he is in some of his main contentions as original as he gives out, are the questions to which some answer should be forthcoming. It is rendered unnecessarily difficult by his manner of citing Leibniz's works, and even unpardonably difficult by his always substituting a translation of his own for the philosopher's words. But there is too much evidence of labour and thought in the book for attempt at answer not to be made.

Beiträge zur Geschichte der Philosophie des Mittelalters. Ed. by Dr. CL. BÄUMKER.

Bd. i., Heft 1. Die dem Boethius fälschlich zugeschriebene Abhandlung des Dominicus Gundisalvi de Unitate. Ed. with commentary by Dr. P. CORRENS, Münster, 1891.

Bd. i., Heft 2. Avencebrolis (ibn Gebirol) Fons Vitæ, ex Arabico in Latinum translatus ab Johanne Hispano et Dominico Gundisalvi, ex codicibus Parisinis, Amploniano, Columbino, primum ed. CL. BÄUMKER. Fasc. i.

It is with the utmost satisfaction that those interested in the history of philosophical questions must hail the first fruits of the important work undertaken by Prof. Bäumker. The vague generalities with which it has been customary to treat the development of metaphysical reflexion in the Middle Ages have been gradually yielding to a more appreciative and better-informed estimate of the ideas of these times, but for full comprehension of the connecting links and most significant conceptions of mediæval thought the indispensable means, a collection of the relative texts with careful exegetical study of them, is as yet largely wanting. Prof. Bäumker's enterprise bids fair to fill up this lacuna in our knowledge of an important stage in the development of human culture, and we wish it every success.

Of the second of the two parts of his *Beiträge* now issued, containing portion (parts i. and ii.) of the *Fons Vitæ* of ibn Gebirol, a more detailed notice must be deferred until the whole text, with such historical and philosophical commentary as the editor gives, is before us. We call attention at present only to the importance of the work which Prof. Bäumker has on hand. Ibn Gebirol under the name or names (Avicebron, Avencebrol, Avicebrol and the like) given to him by the scholastic magnates, Albertus and Aquinas, had long been an object of interest to historians of philosophy, and even after the important contributions to knowledge of his personality and work made by Munk, and more recently by Guttmann, there still remained much to be done. The *Fons Vitæ* has been known to us only in the abridged version of Falagnera, from which Munk's translation in the Mélanges (1859) was taken. Now, for the first time, we shall have in its complete form a work that has exercised remarkable influence on the development of mediæval thought, and that discloses to us in a most interesting fashion the filiation of ancient and mediæval ideas. An account of the four MSS. used by the

editor is promised for the forthcoming number of the *Beiträge*. The work of editing seems to have been accomplished, so far, with the utmost fidelity and with excellent judgment.

The tract, *De Unitate*, which Dr. Correns presents to us, is in itself of much less significance than the *Fons Vitæ*, but it has a quantity of curious literary history attaching to it to which the editor in his commentary, occupying the greater portion of the number (pp. 12-49), does full justice and on which his labour sheds the clearest light. He is able to show that the tract bears manifest traces of an origin much later than Bœthius, to whom in a confused way it is in certain MSS. assigned, that it emanates from a Christian writer, and that its ideas in substance, and, in large part, in form of expression, are drawn from the *Fons Vitæ* of ibn Gebirol. And he gives the strongest grounds for the conclusion that the real author of the tractate was the well-known translator, Dominicus Gundisalvi, to whom in one MS. at least, that of Corpus College, Oxford, it is formally assigned.

Das Schlechte als Gegenstand dichterischer Darstellung. Vortrag gehalten in der Gesellschaft der Litteraturfreunde zu Wien. Von Franz Brentano. Leipzig: Verlag von Duncker & Humblot, 1892. Pp. 38.

The problem Professor Brentano essays to solve in this lecture is—Why should the depiction of Moral Evil, both in Comedy and Tragedy, be such a favourite theme with poets and dramatists? With regard to Comedy, he thinks the solution easy. Evil in its very nature is absurd and ridiculous, and the best material for Comedy is, therefore, found in all kinds of moral depravity.

In Tragedy, we have to seek deeper for the cause of the fascination exercised by the portrayal of the repulsive, the sad, and the sombre. Especially, as Professor Brentano points out, does tragedy delight in the triumph of injustice. Why is the innocent Antigone buried alive? Why should the virtuous Hippolytus meet such an untimely fate? Why should the ingenuous Romeo and Juliet be overtaken by such a mournful destiny? Professor Brentano regards the problem under discussion from three points of view. (1) The peculiar dignity of the subject. (2) The possibility of artistic treatment. (3) The popular taste (p. 19).

There is an element of sublimity in unmerited suffering which harmonises with the lofty aims of tragedy. The God of Tragedy is not a petty schoolmaster dealing promptly to each his due with rod and prize. Nemesis works in a wider sphere, and it is the business of the tragedian to throw into contrast the ephemeral tyranny of man and the eternal justice of fate.

Again, the tragic artist seeks for heroic types of human action and passion, and these he finds most readily in scenes of sin and sorrow.

Besides, variety is the soul of art, and it is the troubled waters of existence that best reflect the grandly picturesque.

Finally, as Professor Brentano urges, the tragedian must appeal to public sympathy. Before all things he must create an effect—he must keep his audience on the poise of expectation. Now nothing is better calculated to arouse gusts of sympathy than the representation of—

> "The spurns
> That patient merit of the unworthy takes".

As a psychological explanation of the absorption of an audience by painful spectacles, Professor Brentano refers to Aristotle's dictum, that

time is a necessary elément in tragedy. There must be a duration in which the plot develops, and painful incidents rivet the attention much more effectively than pleasurable ones, because they are accompanied by a continuous unsatisfied feeling of incompleteness. We might add that this is, in some degree, the impression the perusal of Professor Brentano's own lecture creates. The little that it was possible to say within such narrow limits of space is so well said that we wish he had said much more.

La Religione e il Suo Avenire. Secondo Eduardo Hartmann. By Adolfo Faggi. 1892. Pp. 91.

This is a clear and interesting account of Hartmann's religious views, treated with reference, as is inevitable, to his metaphysical and moral philosophy, and in its connexion also with previous and contemporary German thought, with the views more particularly of Hegel and Schopenhauer. Taking in succession Hartmann's views as to the origin of religion, the classification of religions, the essence and the future of religion, the writer very justly criticises his account of its origin as resting upon the very doubtful theory of 'emotion,' his principle of development and classification as not borne out by historical facts, and his central principle of redemption from *guilt* (not as with Schopenhauer from pain only), as involving the sense of responsibility, which, on the other hand, his deterministic philosophy can scarcely admit. Finally, the essayist concludes that the religious needs of the future will be met, not by Hartmann's 'Concrete Monism,' but by a widening and spiritualising of Christianity.

Ricerche intorno ai Fondamenti di Pensieri. By Professor Dino Varisco. 1892. Pp. 109.

Setting as his problem "to formulate the most simple hypothesis by which to render explicable the fact of reasoning, starting from those data only which are admitted and received as immediate," Prof. Varisco finds that the 'immediate data,' *viz.*, states of consciousness, being subjective, transitory, and individual, cannot be objects of reasoning, which is objective, involves the permanence of the object, and is general. They have, therefore, to be transformed into objects by abstraction, as Rosmini says, and the answer to the problem is "that the transformation of a pure state of consciousness into an object (of thought) is nothing but the turning upon it of the activity of consciousness; in other words, that this activity opposes to itself, *i.e.*, sets to itself as object that upon which it turns". The result, therefore, of this inquiry into the nature of thought is that, given, on the one hand, states of consciousness, and, on the other, mental activity, the states will be worked up, some of them into objects, and some of them, as Prof. Varisco says, into the subject. The opposition between subject and object is thus transcended by reference to the activity which creates it, and the opposition which remains, between states of consciousness and activity, does not apparently trouble the writer. Whatever the psychological value of this account of the origin of the notions of subject and object, it will scarcely satisfy the metaphysical inquiry into their validity or into the nature of knowledge, not as process, but as product, or set at rest, as the writer seems to anticipate, the mind alike of realist and idealist.

RECEIVED also :—

J. Burnet, *Early Greek Philosophy.* London & Edinburgh: Adam & Charles Black, 1892. Pp. vi., 376.

B. Bosanquet, *History of Æsthetic.* London: Sonnenschein, 1892. Pp. xiv., 502.

A. Sidgwick, *Distinction and the Criticism of Beliefs.* London: Longmans & Co., 1892. Pp. viii., 269.

J. H. Muirhead, *The Elements of Ethics.* London: John Murray, 1892. Pp. xi., 239.

Sixteenth Annual Report of the Trustees of the Perkins Institution. Boston: Wright & Potter Printing Co., Sept. 30, 1891. Pp. 408.

G. S. Fullerton & J. M. Cattell, *On the Perception of Small Differences, with special reference to the extent, force and time of movement.* Philadelphia: University of Pennsylvania Press Publishers, 1892. Pp. 159.

F. A. Aulard, *Le Culte de la raison et le Culte de être suprême.* Paris: F. Alcan, 1892. Pp. 371.

L'Année philosophique, Publiée sous la direction de F. Pillon. Paris: F. Alcan, 1892. Pp. 352.

H. Schmidkunz, *Analytische und synthetische Phantasi.* Halle-Saale: C. E. M. Pfeffer, 1889.

A. Oelzelt-Newin, *Ueber sittliche Dispositionen.* Graz: Leuschner & Lubensky, 1892. Pp. 92.

Anon, *Von der Naturnotwendigkeit der Unterschiede menschlichen Handelns.* Berlin: Verlag des Bibliographischen Bureaus, 1892. Pp. 46.

F. de Sarlo, C. Bernardini, *Ricerche sulla circulazione cerebrale durante l'attività psichica.* Reggio nell' Emilia: Stefano Calderini e Figlio, 1892. Pp. 76.

VIII.—PHILOSOPHICAL PERIODICALS.

The Philosophical Review.—Vol. i., No. 2. Prof. A. Seth—Psychology, Epistemology, and Metaphysic. [A careful examination of the ground upon which various branches of philosophy are assigned as subjects of inquiry to Erkenntnisstheorie.] Prof. W. James—A Plea for Psychology as a Natural Science. [A reply to Prof. Ladd's reflexions on the physiological point of view in Psychology. Prof. James prefers a psychology that can cure mental disease to "seraphic insight into the nature of the soul," and this is the sort of psychology which "the biologists, nerve doctors, and psychical researchers are surely tending, whether we help them or not, to bring about".] Benj. Ives Gilman—On some Psychological Aspects of the Chinese musical system. [The conclusion of paper based on most careful and exact collation of facts. Notable for the ingenious application of the phonograph for the purposes of a closer study than is otherwise possible even with the most long-suffering and obliging native musicians.] Discussion, Reviews, &c. —Vol. i., No. 3. Prof. H. Calderwood—Herbert Spencer's Animal Ethics. ["Animal necessities we can see clearly; animal benefits we can reckon up accurately; but animal ethics we cannot find even in faintest outline."] Prof. J. Macbride Sterret—The Ultimate Ground of Authority. ["The immanent formative and life-sustaining power in all the current phases of Educative authority" is held to be "the eternal Reason, the goal and the starting-point of man's true history".] D. G. Ritchie—What is Reality? [Maintains in a clear and attractive manner the ultimate identity of Thought and Being. "A thing really is—that way of thinking about it which fits it into its place in an intelligible system of the universe." The author's argumentation does not seem to justify this conclusion. What he has really proved is rather that a thing really is—*what it must be thought of as being* in that way of thinking about it which fits it into its place in an intelligible system of the universe.] B. C. Burt—Natural Science and the Philosophy of Nature. [The function of the philosophy of nature is "the transformation of the formulæ of natural science into those of thought". "For the philosophy of nature the 'law' of the 'conservation of energy' instead of being merely 'given' as a general 'fact,' or rather, perhaps, as a postulate, is a self-evident, identical proposition, since energy, and energy alone, *is* being in activity, energy." This illustration is certainly an unfortunate one, whatever may be thought of the general view here advocated.] Prof. J. E. Oliver—A Mathematical View of Free Will. [Motives and volitions "cannot so conspire with or oppose the actual physical changes or motions of the moment as to 'do work,' but they can produce deflexion or transference of an energy to whose potential they do not contribute," being *quasi-perpendicular* to all physical forces. An attempt is made from this point of view to rebut the ordinary objections to Free Will.] Discussions, Reviews, &c.

International Journal of Ethics (April, 1892).—President Andrews, of Brown University, writes on 'Economic Reform short of Socialism'. The article, as might be expected from its title, is economic-political rather than ethical. Miss Gilliland writes on 'Pleasure and Pain in Education,' from the point of view of one who "calls the end of life self-realisation". Professor Maurice Bloomfield writes interestingly on

'The Essentials of Buddhist doctrine and Ethics,' and Mr. Mackenzie concludes his lecture on 'The Three Religions'. The longest article is a careful account of the Analysis and Growth of Conscience, by Dr. Starcke of Copenhagen, who views conscience as "a sensibility to what others have good reason to think about us" in the way of praise or blame: a good reason being explained to be "one founded upon the real fully perceived character of our actions". The reviews are numerous and interesting.

THE CRITICAL REVIEW OF THEOLOGICAL AND PHILOSOPHICAL LITERATURE.—Vol. ii., No. 2. Prof. A. Macalister discusses Prof. Max Müller's lectures on *Anthropological Religion*. Dr. Macalister forcibly points out that the "curious blend of Agnosticism and Christianity set forth . . . is a religious system with a new phraseology," and he calls attention to the defects of this view from the orthodox standpoint. Prof. James Robertson's *Early Religion of Israel* is reviewed by Prof. Davison. This work is an excellent instance of the application of logical processes to theological doctrine and critical inquiry. Its method, backed as it is by wide knowledge of the facts, serves to illustrate the necessity for careful sifting of premisses ere accepting conclusions, which appear to be well founded, on simple authority. Perhaps the most useful article is that on Rabbi Guttmann's *Das Verhältniss des Thomas von Aquino zur Judenthum und zur jüdischen Litteratur*. The author's thesis is that Thomas Aquinas was largely indebted to Jewish philosophy and theology. He elaborates this in three main sections: (i.) Thomas Aquinas and Judaism; (ii.) the relation of Thomas Aquinas to the philosophy of Gebirol; (iii.) the relation of Thomas Aquinas to the religio-philosophic system of Maimonides. "The most interesting part of the discussion is that which deals with the relation of Aquinas to Maimonides. The latter was an ardent disciple of Aristotle. Early in the thirteenth century the philosophy of Aristotle became popular among the Christian schoolmen. And the problem before Maimonides and Thomas was practically the same—to harmonise Aristotle and the Bible." When Thomas does not accept Maimonides' conclusion, "his opinions are referred to with the utmost respect". This book is at once fresh, valuable and scholarly. The number concludes, as usual, with an admirable list of "Selected Books," and articles from the leading magazines, in the departments of philosophy and theology.

THE AMERICAN JOURNAL OF PSYCHOLOGY.—Vol. iv., No. 3. The opening paper by Dr. W. Noyes "On Certain Peculiarities of the Knee Jerk in Sleep in a Case of Terminal Dementia" presents no facts of particular psychological value, but points toward future investigations which may be interesting. Dr. Noyes found that under certain conditions the knee jerks fell into groups which seemed to correspond to some extent to the Traube-Hering curve of vaso-motor activity. Should this correspondence be established, he hopes to throw light on the hitherto baffling question of whether or not functional activity of the central nervous system varies rhythmically with the contraction and dilatation of its vascular system. T. L. Bolton writes on "The Growth of Memory in School Children," his conclusions being drawn from observations made on pupils of the public schools in Worcester, Mass. Prof. Jastrow contributes his second series of "Studies from the Laboratory of Experimental Psychology of the University of Wisconsin," opening with a "Study of Zöllner's Figures and other Related Illusions". As Prof. Jastrow contents himself with detailing the facts of his investigations we can do no more than say that he found that all the illusions observed

seemed to have the following principle as a basis, *viz.*, that we tend to regard the direction of the sides of an angle as deviating toward the direction of the angle. The explanation of the principle itself is yet to be supplied. A real service has been rendered however in collecting the most typical of these illusions and reducing them to something like system. "A Study of Involuntary Movements" describes an attempt to register the movements made by the hand while the attention was engaged in another direction, *e.g.*, naming a series of colours, reading from a printed page held in different positions, counting the beats of a metronome, &c. Some rather striking illustrations are given of the well-known fact that our involuntary movements are in the direction of the form of attention, their extent depending largely of course on the favourableness of the anatomical conditions for executing such movements. "Observations on the Absence of the Sense of Smell" present no new facts, and the three remaining studies on "Classification-Time," "Finding-Time," and "Some Anthropometric Tests," are of minor interest. Prof. Jastrow's "studies" are all made with the assistance of his pupils and are proofs of the account to which such work can be turned. Alexander Fraser writes on "The Psychological Foundation of Natural Realism," and reviews of psychological literature, the continuation of Dr. Sanford's laboratory course letters, and notes close the number.

PHILOSOPHISCHE STUDIEN.—Bd. viii., Heft 1. W. Wundt—Hypnotismus und Suggestion. [An elaborate article (85 pages), which will, it is to be hoped, have a salutary effect. In the introduction, the place which hypnotism is usurping in modern psychology and the trend of thought which this implies are remarked on. The first section deals with the phenomena of hypnosis, so far as their characterisation is necessary for psychological treatment. In that following, a psychological theory of hypnotism and suggestion is given. The author follows Bernheim's principle of bringing the facts of hypnosis into relation with other established facts of pathological and physiological psychology, though Bernheim's hypothesis is rejected as being too one-sidedly physiological. In the third section, the claims of suggestion to be recognised as a method in experimental psychology, and in the last the practical (medicinal) significance of hypnotism, are discussed. It is impossible here to reproduce the contents of the paper: a translation would be extremely valuable.] H. Höffding—Zur Theorie des Widererkennens: eine Replik. [A series of notes on the recognition-theories of James, Lehmann, and Wundt. *Introductory:* (1) In immediate reproduction we have not merely a sensation, but a sensation with the consciousness that it is known. This is the simplest case of repetition or practice. (2) On the fact of i. r. all are agreed; it is the explanations of the process which differ. *Theory of i. r.:* (*a*) The formal question. Höffding uses the law of parsimony to support his view, as Lehmann had done. A phenomenon is only explicable by hypotheses which refer to its connexion. For Lehmann, this connexion is with the laws of association, and the simplest and most valid law is that of contiguity; hence his explanation of i. r. For Höffding, the connexion is that of repetition; i. r. is a case of practice. (*b*) Material side; answering of objections. (1) That unconscious ideas are at work in the process of i. r. Höffding denies. Lehmann's smell-experiments showed that a scent which is known, but not determinable, may often be determined by the experimenter's questioning, *i.e.*, there are ideas beneath the threshold, Lehmann maintained, which are rendered effective by the law of contiguity. Höffding replies rightly that the questions can arouse fresh reproductions, which are

adequate to the explanation of the results. Lehmann's accentuation of naming as an aid to reproduction (experiments on shades of grey) is also called in question; practice in naming is practice in the reproduction of the impression itself. (2) James is more correct than Lehmann or Wundt, in that he dispenses with unconscious ideas, only speaks of a tendency of the known to reproduce, and accents practice as a factor in the explanation of i. r. James is incorrectly said to contradict himself as regards similarity-associations. (3) That Wundt uses the feeling of i. r. as explanation of the process is in agreement neither with Lehmann's experiments nor Höffding's facts. There is a feeling of pleasure involved, but that is not all. But is i. r. to be explained by contiguity or similarity, or by association at all? Repetition is treated by Höffding objectively, throughout. The subjective moment is, according to Wundt, feeling; according to Lehmann, ideas which lie beneath the threshold of consciousness. Höffding previously had recourse to the notion of fusion (of a disposition with the repeated impression); this is Lehmann's view, with the similarity-difference.] J. Merkel—Theoretische und experimentelle Begründung der Fehlermethoden, ii. [Second part of the writer's consideration of the psychophysical error-methods. The whole is a very notable contribution to the technical literature of psychophysics.] E. B. Titchener—Zur Chronometric des Erkennungsactes. [The time required for the 'recognition' of a colour averages 30 σ; for that of a printed letter or short word, 50 σ.] O. Külpe u. A. Kirschmann—Ein neuer Apparat zur Controle zeitmessender Instrumente. [The authors describe a new control-hammer, designed by Wundt; and publish the results of a thorough-going examination of the variable errors of the Hipp chronoscope (old pattern), carried out by its aid. It would, perhaps, be an improvement, if the hammer fell through its own support, coming to rest, *e.g.*, on a padded surface at an angle of 45° below the horizontal; in its present form the shock of its fall cannot be good for the chronoscope.]

Zeitschr. f. Psych. u. Phys. d. Sinnesorgane.—Bd. iii., Hefte 2 u. 3. E. Brodhun—Ueber die Empfindlichkeit des grün-blinden und des normalen Auges gegen Farbenänderung im Spektrum. [Violetwards of the *E*-line the green-blind eye is as sensitive to colour-change as the normal eye, or may even exceed it in sensitivity; redwards the normal eye is by far the more sensitive.] H. v. Helmholtz—Kürzeste Linien im Farbensystem. [The third in the series of articles in which Helmholtz seeks to explain difficulties in his theory of colour-vision by an extended application of Fechner's law. The present paper, like so much more of the author's work, is likely to escape challenge by reason of its abstract mathematical form.] Th. Lipps—Die Raumanschauung und die Augenbewegungen. [A lengthy polemic against Wundt's theory of the part played by eye-movements in the building up of our perception of space, following upon the author's article "Æsthetische Faktoren der Raumanschauung" in the *Beiträge zur Psych. u. Phys. d. Sinnesorgane.* The discussion falls into three parts: (1) the field of vision and field of view; (2) the third dimension; (3) judgments of size and distance. Many of the points raised deserve experimental consideration. On the other hand, there is some loose writing, especially in the second section.] Th. Wertheim—Eine Beobachtung über das indirekte Sehen. [The disappearance or darkening of objects, the neighbourhood of which is strongly and suddenly illuminated, takes place both in direct and indirect vision; the brightening of objects, whose neighbourhood is suddenly darkened, is only observable in direct vision.] G. Sergi—Ueber einige Eigentüm-

lichkeiten des Tastsinns. [Touch-sensations proper have no after-effect, nor are successive stimuli summed to a single sensation; pressure-sensations show both phenomena. There is no latency-period for sensations occasioned by touch-stimuli. Pure touch-sensations cannot be evoked on the *glans penis*.] K. L. Schaefer—Beiträge zur vergleichenden Psychologie, i. [A number of invertebrate animals were rotated in the horizontal plane. A rotation of the body in the opposite direction was observed in the case of dung-beetles, ants, house-flies, and earwigs, if they were in active movement at the time of commencement of the experiment. Wood-snails displayed this tendency to inverse movement (which the writer inclines to regard as reflex in character) only sometimes, and caterpillars of the cabbage-white variety not at all. No giddiness followed the rotation.] J. Rehmke—Gegenantwort auf die Erwiderung von O. Flügel. Litteraturbericht. Hermann Aubert.

Zeitschrift für Psychologie u. Physiologie der Sinnesorgane.—Bd. iii., Heft 4. J. von Kries—Ueber das absolute Gehör. [Interesting though rather unsystematic notes upon absolute tone-memory. This is not to be confused with relative tone-memory, for which a normal tone is necessary (*cf. Phil. Stud.*, iii. 534): it is only different in degree from the almost universal capacity of distinguishing between a high and a low tone. The author finds (1) that so much musical training is needful, that the recognised tones can be named; (2) in all other respects the absolute tone-memory is independent of musical practice; (3) it does not imply an otherwise especially good ear; (4) it depends on the duration and intensity of the clangs; (5) it is best for the middle tone-region; (6) it is in most cases dependent on the colour of the particular clang, though not determined by the special instrument which its possessor may chance to play. Prof. v. Kries gives an analysis of the association-processes involved; and attempts, without much success, to explain (6).] L. Matthiessen—Die zweiten Purkinjeschen Bilder im schematischen und im wirklichen Auge. [Helmholtz had used the Purkinje mirror-images to determine the curvature of the crystalline lens, on the assumption that the latter represents a homogeneous, isotropic medium. The writer deals with the real lens, as an anisotropic body, with a refraction-index which varies from layer to layer. He gives determinations for the human and horse's eye.] Besprechungen. [A detailed review of Prof. James' *Principles*, by A. Marty.] Litteraturbericht.

Pflüger's Archiv f. d. gesammte Physiologie.—Bd. li., Heft 2. A Kreidl—Beiträge zur Physiologie des Ohrlabyrinths auf Grund von Versuchen an Taubstummen. [The author of this research has done good psychological service, if not always with adequate psychological knowledge, by the proofs here adduced in confirmation of the theory that the labyrinth of the ear is to be regarded as the organ of the static sense. A large body of experiments on animals points to the fact that the semicircular canals are the sense-organs for the perception of rotation of head and body. The present investigation was undertaken partly as a continuation of Prof. James' work (the results of which are not wholly trustworthy, as depending on the statements of the patients themselves), partly in consequence of a suggestion of Breuer's. It is divided into a historical introduction and three parts. (1) *Eye-movements.* According to the theory of Mach and Breuer the compensatory eye-movements which normally follow rotation of the head should be absent in a large percentage of deaf-mutes. About 50 p.c. of Kreidl's reagents showed no eye-movements. Now Myding found in 56 p.c. of his deaf-

mute dissections a pathological condition of the canals. This number coincides admirably with that obtained by Kreidl. (2) *Judgment of perpendicularity.* Breuer regards the otolith-apparatus as the organ for our perception of acceleration of movement of the head and body, and of their position. Kreidl's reagents were rotated in a circle of 2 m. radius, with a rapidity of 11 revolutions in the 1'. Of the 50 p.c. mentioned in § 1 as showing no eye-movements, 21 p.c. moved a clock-hand to the perpendicular during rotation with approximate correctness; in the other cases the hand showed a more or less normal deflexion. Dissection proves that the otolith-apparatus of deaf-mutes is less often impaired than the canals; and we possess, of course, other aids to a judgment of direction. (3) *Locomotion.* Of eleven deaf-mutes—all with abnormal canals, and seven (conjecturally) with abnormal otolith-apparatus—examined for balancing reflexes, and walking and standing with closed eyes, only one (perhaps two) gave normal results. Here, too, the injury to the labyrinth must be regarded as cause of the phenomena.]

Archiv für Geschichte der Philosophie.—Bd. v., Heft 3. E. Zeller—Noch ein Wort ueber die Abfassungszeit des platonischen Theätet. [Rejoinder in the discussion that has been going on between the author and E. Rohde as to the date of the *Theætetus.* Against Rohde, and also incidentally against F. Dümmler, Zeller still stands out for his original date of 391 B.C. The argument here turns almost exclusively on the "twenty-five ancestors" passage.] M. Consbruch—Ἐπαγωγή und Theorie der Induction bei Aristoteles. [A very noteworthy examination of Aristotle's wavering conception of Induction, in the light of developed modern doctrine.] B. Seligkowitz—Causa sui, causa prima et causa essendi. [With special reference to Schopenhauer's criticism of Spinoza.] W. Dilthey—Auffassung u. Analyse des Menschen im 15 u. 16. Jahrhundart. [Concluding half of comprehensive review begun in a former number. The present division is devoted to the work of the Teutonic mind, from Erasmus to Sabastian Franck.] Jahresberichte.

Vierteljahrschrift de Wissenschaftlichen Philosophie.—Bd. xvi., Heft 2. A. Riehl—Beiträge zur Logik, ii. [Discusses the different forms of judgment and of inference. The guiding clue is furnished by the distinction between conceptual propositions, which express thought-necessity, and judgments proper, which affirm real existence. Conceptual propositions, such as those of mathematics, are always universal by their very nature. The article is interesting and valuable.] Ernst Platner's Wissenschaftliche Stellung zu Kant in Erkenntnisstheorie und Moralphilosophie. [Platner placed the ground of the necessity of the categories in the nature of things in themselves. He held that they can function as forms of a non-sensuous cognition. He attacks the Kantian separation of sense and understanding, and he thinks that Kant has entirely failed to prove the objective validity of the categories. Kant has, according to him, made no real advance on Hume; for the laws of association are just as deeply rooted in our intellectual constitution as the categories. He combats the doctrine of the Dialectic, professing his inability to see why knowledge should be restricted to sensible experiences and nothing left in the domain of Reason but ideas without objects. The antinomies, he urges, involve no self-contradictions of Reason, but rather inconsistencies between the demands of Reason and of Imagination. In Ethics he charges Kant with confusing the two essentially distinct conceptions of Perfection and of Good. Perfection lies in the observance of the moral law. But happiness is the supreme good for the

sake of which perfection is pursued.] G. Frege—Ueber Begriff und Gegenstand. [A defence of the writer's view of concepts as never being things but always predicates of things.] R. Willy—Bemerkungen zu Richard Avenarius' *Kritik der reinen Erfahrung.* [An interesting *résumé* and criticism.] Anzeigen, &c.

Philosophisches Jahrbuch.—Bd. v., Heft 5. Victor Cathrein—Socialethik oder Individualethik. [In this article the question is discussed whether Moral Philosophy is concerned most directly with Society, or with the Individual. The author considers the tendency to base morality on the needs of Society and not of the Individual as an outcome of modern science.] Wolff—Lotze's Metaphysik. [The continuation of a criticism of Lotze's doctrines in which Dr. Wolff finds truth and error, sound precepts and faulty applications, attractive rind and worthless core intermingled.] Pfeiffer—Der Æsthetische Contrast in den Ersheinungen des Erhabenen. [This concludes an able and interesting series of papers on contrast as an element of the sublime.] C. Ludwig—Der Substanz-begriff bei Cartesius im Zusammenhang mit der scholastischen und neureren Philosophie. [Compares the dogmatic conception of substance framed by Descartes with the sceptical presentation of the same idea in Modern Metaphysics.] Gutberlet—Die Willensfreiheit und die physiologische Psychologie. [Professes to approach the free will controversy from the most modern standpoint of physiological psychology. The reasoning is acute throughout.] Recensionen und Referate.

Zeitschrift für Philosophie und philosophische Kritik.—Bd. c., Heft 1. A. Wreschner—Ernst Platners und Kants Erkenntnisstheorie. [Discusses the influence of Kant as shown in the differences between the first and second, and between the second and third, editions of the Aphorisms.] G. Frege—Ueber Sinn und Bedeutung. [The "Bedeutung" is the reality, signified by a mental representation: the Sinn is the special mode in which this reality is represented—the point of view from which it is regarded.] Nikilaas von Seeland—Ueber die Einseitigkeit der herrschenden Krafttheorie. [Tries to show that the phenomena of life are inconsistent with the conservation of energy as ordinarily understood.] Recensionen, Bibliographie, &c.

Revue Philosophique.—17e Année, No. 4. Charlton Bastian—Les processus nerveux dans l'attention et la volition. [The process of attention is essentially sensorial although inseparable from motor concomitants. The phenomena of volition are a simple transcription into action of the intellect. Every conception of the will as a separate entity is an illusion, a kind of psychological phantom.] F. Paulhan—La Responsabilité. [In morbid or abnormal states characterised by a more or less marked dissolution of the personality, a more or less great de-coordination of the psychic systems, the diminution of responsibility is proportional to that de-coordination, of which in each case it is important to determine the degree.] Pierre Janet—Le Spiritisme Contemporaine. [An amusing account of the conquests of theosophy in the realm of spiritualism. "It is not always possible to speak seriously of things which are not serious."] Analyses et comptes rendus.

Rivista Italiana de Filosofia.—Anno vii. (March and April). P. L. Cecchi—Filosofia della storia. [Seeks to show the inadequacy of evolution, which the author conceives as a corollary of association, to

explain the movement of thought and the introduction of new concep tions. Immediate creation is regarded as a better explanation.] Prof. D. V. Laureani—La legge morale. [Suggests, after a brief survey of the views of Kant, Mill and Spencer, a theory of the moral law as based upon original altruistic tendencies, deduced by reflexion, and receiving their character of necessity and universality from the reason.] R. Bobba—Di alcuni commentatori italiani di Platone (cont.). [Deals with Patricci, Erizzio and Pano.] Bibliografia, &c.—Anno vii. (May and June). V. Benini—Il momento dell' orservazione. [Discusses the nature and conditions of 'inspiration' in its relation to voluntary intellectual effort.] Prof. Ferri—Della coscienza sensitiva. [Continued from the March-April No. of 1891, and treating of "Perception". Rejecting the Wundtian distinction between perception and apperception as being merely a distinction of degree, Prof. Ferri understands by perception the all-pervading synthetic activity, which is distinct from, though it always accompanies, sensation. He is concerned in this paper with establishing the fact of such activity, as against the associationists, and with showing the part it plays in the elaboration of the sense-given material. Starting from the primary opposition of activity and passivity, he rather unfortunately revives to express it the terms, subjective and objective, and with them some old ambiguities. While the subjective side has its principle of explanation in the synthetic activity of perception, on the objective side we are referred back to the laws of motion, and from the psychological opposition between activity and passively given content we are brought to the extra-psychological opposition between "mind and matter".] R. Bobba—Di alcuni commentatori italiani di Platone. [The final paper dealing with Antonio Conti.]

IX.—NOTES.

THE PSYCHOPHYSICS OF MOVEMENT.

The writers of this note have recently published a monograph[1] describing some work on which they have been engaged during the past three years. It contains a discussion of more than 20,000 judgments, illustrated with many tables and diagrams. The detailed results are too extended and technical for any but special students of psychophysics. A summary may, however, be of interest to a larger circle of readers.

I. *Psychophysical Methods.*

The method of the just noticeable difference—in which an observer finds a difference which he can just perceive—is not satisfactory. If the observer simply choose a difference, which he thinks he can always or usually perceive, the result is without objective criterion. Indeed, our experiments show that those who think they can perceive the smallest difference are apt to be the worst observers. If the percentage of mistakes made by the observer be recorded, this method becomes a case of the following. But the "just noticeable difference" is not a convenient difference to use in the method of right and wrong cases. If the percentage of right cases be very large, a single chance variation greatly affects the average. If there be no mistake, we have, indeed, found a difference which can be perceived, but not the difference which can just be perceived, nor any other quantity which can be used as a measure of discrimination. If the just noticeable difference be interpreted by the observer as a difference apparently equal to some other difference, the method is reduced to that of estimated amount of difference.

The method of right and wrong cases—in which two stimuli nearly alike are presented to an observer, and he is required to say which seems the greater—is the most accurate of the methods. It requires a considerable number of experiments—at least 100,—and the number must be the greater the less practised the observer. The method is consequently not well suited for provisional, anthropometric, or clinical purposes. The percentages of right cases obtained do not directly measure the fineness of discrimination. The probable error, that is, the difference with which an observer is right 75% of the times, is the most convenient measure of discrimination. The probability integral may be used to calculate the probable error when the amount of difference is known, and the percentage of right cases is greater or less than 75. It is better not to allow the observer to give doubtful as his decision, but the confidence felt by him in its correctness may be recorded with advantage. The observer is more apt to be right than wrong, even when he feels little or no confidence in his decision. Some observers are not confident unless they are, in fact, right, while others are often confident when they are wrong.

The method of average error—in which an observer makes one stimulus as nearly as possible like another—is, in many cases, the most convenient of the methods. It is closely related to the preceding, as the probable error can be found either from the average error or from

[1] *On the perception of Small Differences, with special reference to the Force, Extent, and Time of Movement:* University of Pennsylvania Press, Philadelphia.

the percentages of right cases. The probable error of the just noticeable difference, or of an estimated amount of difference, may also be determined, and the several methods thus combined. The error obtained by the method of average error is complex, being partly an error of adjustment and partly an error of perception. These errors may be separately determined by requiring the observer to judge the stimuli by the method of right and wrong cases after they have been adjusted. The average error may be analysed into a constant and a variable error. The distribution of the errors tends to follow the probability curve. This method can be used to special advantage when only a few experiments are made, as a result is reached more quickly than by the method of right and wrong cases.

The method of estimated amount of difference—in which an observer judges the quantitative relations of stimuli as in making one difference equal to, or double another—gives variable results. The observer probably does not estimate quantitative relations in sensation, but quantitative differences in the stimuli learned by asssociation. It is consequently an open question whether the differences in sensation are qualitative or quantitative.

Great care should be taken in psychological experiments to keep all the conditions constant, except the variable to be investigated. The observer should not know the results of preceding experiments, nor the objective relations of the stimuli. Experiments should not be rejected because they make the averages less accordant. The results of experiment depend on accommodation to the conditions of experiment as well as on differences in senses or faculties, and these factors should be separately studied.

II. *The Error of Observation and the Magnitude of the Stimulus.*

Weber's law, according to which the least noticeable difference is proportional to the magnitude of the stimulus, does not hold for the extent and force of movement, as the least noticeable difference (or the error of observation) increases more slowly than the stimulus. Fechner's law, according to which the sensation increases as the logarithm of the stimulus, does not hold, as it rests on Weber's law, and on assumptions which are probably incorrect. As there is no logarithmic relation between mental and physical processes, the psychophysical, physiological, and psychological theories put forward to account for it are superfluous.

When amounts of difference in movements are estimated, the stimuli tend to be judged in their objective relations, and not as the logarithm of these. The results obtained by the method of right and wrong cases, and by the method of average error, determine the error of observation. This is a physical quantity. Its correlation with other physical quantities (for example, the magnitude of the stimulus) depends on physiological and mental conditions, and offers an important subject for psychological research. A mental quantity is not, however, directly measured. The error of observation usually increases as the stimulus is taken greater, but more slowly than in direct proportion to the magnitude. If the errors made in observing two stimuli of the same sort be combined, they will not be twice as large as the average error, but will equal the average error multiplied by the square root of two. This results both from theory and from our experiments. Consequently if two magnitudes, say two seconds, be observed continuously, the combined error in observing the two seconds would tend to equal the error in observing one second multiplied by the square root of two, and generally the error in observing a magnitude, extensive or intensive,

would increase as the square root of the magnitude. The summation of errors in this manner seems to account perfectly for the usual increase of the error of observation ("just noticeable difference") with larger magnitudes. The error would increase as the square root of the magnitude, if each fraction of the magnitude, physically equal, were, in fact, subject to the same error of observation. In actual perception this would seldom or never be the case, but most of our experiments give an error of observation more nearly proportional to the square root of the magnitude, than directly proportional to the magnitude (Weber's law). We, therefore, substitute for Weber's law the following: *The error of observation tends to increase as the square root of the magnitude, the increase being subject to variations whose amount and cause must be determined for each special case.*[1]

III. *The Extent of Movement.*

Experiments on the extent of movement were made by measuring the accuracy with which movements of the arm can be adjusted. The four distances chosen were 100, 300, 500, and 700 mm. Time was kept by a seconds pendulum, one second being allowed for each movement, and one second for the interval between the two movements to be compared. Experiments were made by the four psychophysical methods on one observer, and by the method of average error upon two others.

The attempts to mark off a distance just greater and one just less than 500 mm. resulted in, respectively, 539·4 and 477·2 mm. The distance marked off in separate experiments was highly variable. Even for groups of 100 experiments the average, just noticeable difference, varied, for the attempt at just greater, between 60·1 and 21·5 mm., and for the attempt at just less, between 37·7 and 4·8 mm. In striking contrast with these figures was the slight degree of variation in the variable error and its variation. For instance, where in two groups of 100 experiments each, the just noticeable difference was 60·1 and 21·5 mm., the corresponding variable error was 9·8 and 8·9. The highly variable character of the just noticeable difference makes it of small value in psychophysical experiment.

By the method of estimated amount of difference three kinds of experiments were made. An attempt was made to halve 500 mm., to double 300 mm., and to find the mean between 300 and 700 mm. The results of these experiments were all contrary to Fechner's law, the attempt to halve 500 mm. resulting in a distance of 305·2, the attempt to double 300 giving one of 560·1, and that to find the mean between 300 and 700 giving 512·4. In these experiments the variable error was, in relation to the whole extent of the movement made, greater than in the experiments by the method of just noticeable difference.

The experiments by the method of average error consisted in attempts to measure off on the scale 100, 300, 500, and 700 mm. The results of the experiments on the first observer showed a marked tendency to over-estimate the shortest distance, while the longest was under-estimated. The variable error for the four movements was, respectively, 5·3, 8·8, 9·5, and 8·9; or about $\frac{1}{19}$, $\frac{1}{34}$, $\frac{1}{53}$, and $\frac{1}{79}$ of the stimuli. The experiments on the other two observers gave the same general results. Their combined variable errors were about $\frac{1}{7}$, $\frac{1}{13}$, $\frac{1}{17}$, and $\frac{1}{33}$ of the stimuli. Thus the variable error increases much more slowly than the stimulus, and Weber's law does not obtain. The error increases more nearly as the square root of the stimulus, but more slowly, being actually smaller for 700 than for

[1] One of the writers (G. S. F.) does not fully assent to the subject-matter of this section.

500 mm. This is probably because the distance was nearly the limit which could be reached, and the observer was helped by the strain.

In the experiments by the method of right and wrong cases the stimuli used were 500 and 510 mm. When the second stimulus was the greater, 75% of the judgments were right, and when the second was the less, 71·8%. The probable error (the difference which could be distinguished, 75% of the time) is 11 mm. The first movement was slightly under-estimated, the constant error being ·7. The degree of confidence expressed by the observer was a fair index of the objective correctness of his judgment.

IV. *The Force of Movement.*

A dynamometer may be used to advantage in studying the discrimination of the force of movements, but the clinical dynamometers are too inaccurate for scientific experiment. In making experiments on movement the observer can himself give the first or normal movement as well as the second or judgment movement, and the two movements will thus be made and perceived under like conditions.

"The just noticeable difference" in the force of movement varied greatly, not being proportional to the error of observation, but more accordant results are obtained if the probable error be found by taking into account the number of mistakes made by the observer. The average error of the just noticeable difference may also be used as a measure of discrimination. The just noticeable differences (for two observers) for about 2, 4, 8, and 16 kg. were respectively about $\frac{1}{5}$, $\frac{1}{7}$, $\frac{1}{5}$, and $\frac{1}{13}$ of the stimulus. The variable errors of observation were respectively ·12, ·20, ·37, and ·41 kg., and the probable errors obtained by taking the percentage of the errors into account were respectively ·14, ·26, ·40, and ·45 kg.

Experiments by the method of average error gave (for five observers) variable errors ·19, ·29, ·43, ·46, kg. for the magnitudes 2, 4, 8, and 16 kg. respectively. The worst of the five observers had an error about $\frac{1}{3}$ larger than the best. Some observers are relatively better with the weaker, some with the stronger movements. There were considerable constant errors varying with different observers. The smallest magnitude was usually under-estimated, and the largest magnitude over-estimated. Neither the just noticeable difference nor the error of observation is a proportional part of the stimulus. Weber's law consequently does not hold for the force of movement. The error of observation is nearly proportional to the square root of the magnitude.

The error, when two movements are made as nearly as possible alike, is partly an error of perception, and partly an error of adjustment, and these two factors may be separated. The error of perception was, on the average, about twice as great as the error of adjustment, but the error of adjustment was relatively the smallest for the best observers. The errors in making two movements as nearly alike as possible tend to be distributed as required by the probability curve. The combined error obtained by adding algebraically the errors in pairs is nearly equal to the average error multiplied by the square root of two.

Experiments by the method of estimated amount of difference showed that the force of movements tends to be estimated in their objective relations, and not as the logarithm of these. The results are variable, and subject to large constant errors.

V. *The Time of Movement.*

Apparatus can be constructed which will measure accurately and conveniently the time either of a slow movement or of a quick blow.

When movements are discriminated, it is an advantage to let the observer adjust the time of the first as well as of the second movement. The error in judging the time of a movement (50 cm. in extent) with the arm, lasting about $\frac{1}{5}$, $\frac{1}{4}$, $\frac{1}{2}$, or 1 sec., is nearly proportional to the magnitude, being (as the average of five observers) about $\frac{1}{10}$ thereof. The error with the worst observers was about twice that with the best. With the quicker movements the observer judges chiefly by the force of the blow, and as force is discriminated more accurately than time, this may account for the error increasing more rapidly than the square root of the magnitude.

With $\frac{1}{2}$ and 1 sec., when the time of the two movements seemed equal, the second was the slower. When two blows in succession are made as quickly as possible, the second is the quicker, and seems the quicker. Half a second seemed less than half of 1 sec., and more than double $\frac{1}{4}$ sec.

The results obtained by analysing the error into an error of perception and an error of adjustment, and from the distribution of errors and summation of errors, were nearly the same as with the force of movement.

The time of the quickest possible blow (50 cm. in extent) varied (with four observers) from ·085 to 1·81 sec. While the rate of movement varies considerably with different observers, its average variation under like conditions is small, for a good observer ·005 sec. The time was about the same for the right and left hand, and the rate was nearly uniform. The rate of movement should be used in the study of diseases of the nervous system.

Within the limits investigated the extent of movements can be judged better than the force, and the force better than the time.

VI. *Lifted Weights.*

The probable error in discriminating lifted weights, weighing about 100 grams, varied (for nine observers) from 5 to 8·2 grams, the average being 6·2 grams. This is the difference which could be correctly distinguished three-fourths of the time. The difference which could be correctly given 99 times out of a hundred would be about 21 grams. The probable error is nearly the same, whether calculated from a large difference and large percentage of right cases, or from a small difference and smaller percentage of right cases.

The confidence felt by different observers in the correctness of their judgment varies greatly and is not proportional to their fineness of discrimination. The constant error can be calculated. In these experiments it varied from ·5 to 6·8 grams. The second of the two weights seemed relatively the heavier to nearly all the observers. In judging the accuracy of discrimination of an observer, both variable and constant errors should be considered.

The probable error is not greatly altered when the manner of lifting the weights is altered. It becomes larger when the weights are lifted with different hands or up or down only. It is scarcely altered when one weight is lifted four times as high or four times as fast as the other.

VII. *Lights.*

In our experiments on lights, apparatus was devised to give the observer two sensations of light in succession, each lasting one second and one second apart. The conditions were thus similar to those in the experiments with lifted weights. The lights compared were as 100 to 110, 120, 130, and 140. The probable error (given in hundredths of the intensity of the stimulus) varied for nine observers, from 9·9 to 18·7 with an aver-

age of 13·9. Reckoning upon this basis, a difference to be correctly given 99 times out of 100 would have to be about 48, or nearly ½ the stimulus. This large figure may be due partly to the fact that the illuminated area on the retina was small and the intensity of the lights used not great; but it was probably chiefly due to the sensations being successive. We consider it an advantage to have the sensations successive, as the conditions can thus be kept constant, and sight can be compared with the other senses, muscular sense, hearing, &c. Different observers differed much in their degree of confidence, in the correctness of their judgment, and their degree of confidence was no indication of the relative fineness of their power of discrimination. For the same observer, however, the degree of confidence corresponded fairly well to the degree of objective accuracy. All the observers showed a tendency to under-estimate the second light, the constant error varying from 1·4 to 16·2. Under the conditions employed the muscular sense is about as again accurate as the sense of sight.

Memory for sensations may be studied by increasing the interval between the two stimuli to be compared, the probable error of an observer measuring his rate of forgetting. Observers remembered lifted weights and lights so well up to nine seconds, that their error of observation was scarcely increased. When the time was from 15 to 61 seconds the error was increased by about one-third. This is contrary to the common view, according to which we are supposed to forget most rapidly at first.

JAMES MCKEEN CATTELL.
GEORGE STUART FULLERTON.

CROOM ROBERTSON TESTIMONIAL.

Some months ago a proposal was made to mark Professor Robertson's retirement from the editorship of MIND by some expression of his contributors' regret and some token of their good-will. Seventy-four contributors responded to the call, and the total subscription amounted to £68. A gold watch and an albert chain and seal have been sent to Professor Robertson, accompanied by the following letter:—

"DEAR PROF. ROBERTSON,

"As contributors to MIND we deeply regret the circumstances that have compelled you to relinquish the arduous duties of Editor, which you discharged for sixteen years with such acknowledged success.

"We desire to place on record our sense of the great value of the services you have rendered to the study of psychology and philosophy by the steadfastness of your endeavours to maintain the high standard of excellence at which the original founders of the review aimed, as well as by your exemplary fairness towards all philosophical opinions, however diverse, that sought for reasoned statement in your pages. We desire to express not less warmly our recognition of the personal sacrifices of time and energy which you have unstintingly made, and our admiration of the candour, amiability and courtesy which rendered all our relations with you as Editor a source of unmingled pleasure to us.

"The volumes of MIND that have been published under your editorship will long remain a worthy memorial of your labours and may fitly afford you a solid basis for satisfaction in any retrospect of those past years. But we trust it will give you pleasure to accept from us the accompanying more personal memorial as some token of our affection for you, our esteem for your work, and our earnest hope for your continued health and welfare."

This letter was signed by the seventy-four contributors.

New Series. No. 4.] [October, 1892.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

I.—THE FIELD OF ÆSTHETICS PSYCHOLOGICALLY CONSIDERED. II.

The Differentiation of Æsthetics from Hedonics.

By Henry Rutgers Marshall.

One who has followed the argument presented in the first division of this article, published in Mind, N.S., for July, 1892, will grant, I think, that the search for a basis of separation between the Æsthetic and Hedonic fields has given us no satisfactory psychological result: this serves, therefore, to emphasise the *connexion* between the Æsthetic and Hedonic fields rather than their separation. But if this review has been unsatisfactory on the whole, it at least has brought into clear relief a remarkable *conflict of authorities* which deserves attention. Contradiction of dogma is so marked that one might believe Æsthetics to mean something quite different for the opposed dogmatists. But although in some cases attempt is made on theoretical grounds to use the term Æsthetics in a limited and unusual sense, it is apparent that the opposed theorists are dealing with the same psychological data. However diverse the mental fields which they consider may be, they overlap in many directions, and the ground which is common gives assurance that practically the same matter is under discussion by all.

This conflict of authorities itself argues, it seems to me, that the hedonic quality is the bond between these diverse fields. It argues once again that the *connexion* between the Hedonic and Æsthetic fields is more worthy of emphasis than their separation. For, in the first place, if this view be the true one, we are led naturally to the position that all fields of pleasure-getting are within the scope of the æsthetic.

Whatever difficulties may appear to the acceptance of so wide a view for one who holds the current Pleasure-Pain theories, no especial difficulty in this direction, it seems to me, occurs to one who will accept the theory which I defend. For one who thinks of pleasure as being a sensation or an emotion, or a psychic state of kindred nature; or for one who considers pleasure as a mental fact *sui generis*, a special kind of feeling (Gefühl); for either one I can see how difficult it might be to accept this, or in fact any hedonistic explanation of Æsthetics.

The æsthetic psychosis is so complex and so variable in its elements that it cannot be looked upon as an activity of a fixed nature brought into existence by, or in the process of, other activities as under such views must be the case with pleasure, and what is determined by pleasure.

But if pleasure be, as I hold, a special quality which, under proper conditions, may belong to any mental element, then complexity and variability present no obstacles whatever. For coexistent varied and varying mental elements may well be pleasurable, and by the process which we may legitimately call summation may aid each other in producing pleasurable complexes which shall be æsthetic.

Summation of Pleasure is nothing more than the co-presentation of varied elements which happen at the time to be pleasurable.

Granting then that all pleasure fields are to be considered, we see that if the æsthetic field is determined by hedonic quality we should *expect* to find the former varying with the character of the one who describes his field, for the hedonic field is known to vary from individual to individual. This variation has certainly been exemplified in what has gone before. Furthermore, upon making a survey of the theories which have been reviewed, one can trace, it seems to me, the influence of what, to borrow from Science, we may call the "personal equation" shown by the several theorists. It is the man whose mind is impressed strongly by the presentations of sense whom we should expect to find emphasising the sensual elements in

Art work, and in our own times, in which scientific investigation has brought the sensational elements into undue prominence in many ways, we should look to find the most thorough-going exponents of such a position. Mr. Grant Allen in his *Physiological Æsthetics* goes as far perhaps in this direction as any other writer. This is the work of a man whose effort up to the time of its writing had been turned largely in the direction of naturalistic research. German scientific workers, like Helmholtz, give us also good examples of this sensational over-emphasis.

Burke, though making "touch" the basis of many of his æsthetic qualities, gave on the whole the greatest prominence to the importance of the "love" element in Art, and Burke's life was one of philanthropic statesmanship; he had a strong predisposition to benevolence. Guyau takes similar ground,[1] and he comes of a race among whom the amatory passion is proverbially predominant. Kant's Universality may be mentioned here, apart from the theoretical position which it implied for him, as probably showing his own region of æsthetic pleasure-getting. We find again that the emphasis of the intellectual elements is presented by those whose minds are bent towards intellectual inquiry, and the fact that for most thinkers the centre of interest lies in their mental work accounts for the multiplication of theory in this direction. Hegel, making the æsthetic the immediate presentation of the Absolute to sensuous intuition; Baumgarten, looking to the field of obscure perception; Schelling, to the perception of concord—all show their mental bias. To pass to another field, it is the religious Cousin who makes Æsthetics dependent upon the existence of a special internal spiritual sense, and Ruskin, the theistic devotee, who tells us that the representation of Divine Types is all-important.

Now it is evident that the mere pleasure field varies in much the same way in relation to each man's "personal equation," and in this we have the explanation of the divergence of view which we find, and a help towards the answer to our inquiry. Our field of pleasure-getting is determined by our capacities; as they vary so must our enjoyments vary. Examination will show that in the main there is a correspondence between the æsthetic field and the general pleasure field, which capacity determines. The barbarian loves brilliancy of colour and strength of contrast, and his crude art works show the qualities which give him his

[1] *Problèmes de l'esthétique contemporaine.*

fullest pleasure. His greatest interest, the chase, war, and the coarser passions, form the subject of his art, in the dance and in the earlier forms of representative effort; as his interests change, his art, the mark of his æsthetic field, correspondingly alters; the more delicate beauties of form become predominant in his art work when perfection of physical skill has shown its advantage over mere bigness or strength and has become the interesting feature for the race. The impulse which leads to the propitiation of gods, and makes their supposed satisfaction the deepest interest of life, leads to a glory of architectural art which accords with the power and might that men take the greatest pleasure in picturing.

The intense religious impulse of a higher kind, the satisfaction of which makes the interest of the middle ages, finds its correspondence in the subject of its art. The later times show a constantly growing delicacy of perception and emphasis of what may be roughly called the more intellectual interests of life, and art shows a corresponding change.

The general correspondence between individual and racial life would lead us to look for a similar change of æsthetic field with our own individual development, and this is clearly seen. The child rejoices in objects not very dissimilar from those that delight the savage; the youth shows more fully the appreciation of the emotional pleasures of art; the man must be full grown, however, to find his æsthetic field in the region near that of a Lessing. Thus we find in this view an explanation of the existence of strong opposing positions taken in different ages, *e.g.*, the Socratic emphasis of Usefulness as opposed to the modern exclusion of "Zweckmässigkeit". We are thus enabled also to explain the fact that men of different quality of mind differ so strongly in opinion in this regard; for it appears clear to us now, to use the words of the younger Mill, that "the sources of the feelings of beauty . . . must be to a material extent different in different individuals". Thus also we find explanation of diversity of view in the same individual as he expresses the different moods in which his mind works from day to day; as, for example, in Ruskin's emphasis of the useless in architecture in "Lamp of Sacrifice" as opposed to his principle of "Vital beauty" in the appearance of the *fulfilment of function* in living beings. Thus we find explanation of the difference of view expressed by thoughtful men as their mental attitude changes with their development. Note Matthew Arnold's strong emphasis of broad

mystic effects in Poetry in his "Maurice de Guérin,"[1] as opposed to his emphasis of concreteness in Poetry in his later work[2] as he grew to feel more strongly the influence of this keen scientific age. The Arnold in this latter position was another man from the Arnold of the former. In the latter case his mental attitude approached Lotze's, and he, possibly unwittingly, expressed somewhat Lotze's view. In the former case he spoke as a poet and expressed the importance of the indefinite mystic element in the æsthetics of poetry.

Thus again we see that increasing years going hand in hand with changes of mental capacity, or limitations of capacity due to intensity of application in certain special directions, must inevitably bring a man to a point where he can no longer gain delight in the fields to which the most cultivated men in their prime attach the greatest æsthetic value, and which to him at some time may have seemed of deepest interest. If he allow the name *æsthetic* to cling to that which the world calls æsthetic rather than to the characteristic, subjective mental attitude involved, he must find himself with Darwin mourning the loss of capacity for æsthetic enjoyment. But surely Darwin was wrong. Concentration of effort, advancing years, do not cut us off entirely from æsthetic delight, although they do change the mental region in which the æsthetic lies; and, what is of more moment, do render our æsthetic states less prominent because they limit directions in which mental activity is vigorous and in which therefore pleasure-getting is full or even possible.

The Differentiation of Æsthetics from Hedonics. We conclude, then, that there is no kind or description of pleasure which is not for one or another, part of what makes up the æsthetic psychosis. There is no pleasure or class of pleasures which we are able to say must be excluded from the æsthetic field in its widest sense, as it is shown to exist in the experience of the race. On the other hand, there seem to be for each individual certain pleasures which he individually does exclude from his own æsthetic field. So far as I can judge from an examination of my own consciousness I can say that no pleasure-for-me at any moment fails to become a component part of the æsthetic complex of that

[1] "Poetry can awaken it (a full sense of things) in us, and to awaken it is one of the highest powers of Poetry."

[2] Essay on Emerson: "He is not plain and concrete enough; in other words, not poet enough".

moment. There is no particular pleasure which I was experiencing a moment ago which I can say stood apart from the pleasures which during that moment thrilled me in what I recognised as an æsthetic state of mind. Common speech upholds this view, for we find the word "beautiful" applied to all sorts and kinds of objects which give us the most ephemeral of pleasures.[1] The Germans use *schön* in the same way and the French their more varied phrases in similar manner. On the other hand, however, I clearly do with others call certain states pleasant which are excluded from the æsthetic field, and this æsthetic field therefore I do separate in thought from the hedonic field. Why or how this separation is made is a question which must be answered before hedonistic æsthetics can be felt to be satisfactory or tenable.

We must note at the start that in undertaking this inquiry we change our standpoint in no small respect. No longer do we consider the make-up of the psychosis of æsthetic impression, but we are dealing with the matter of æsthetic judgment and the standards which judgment implies. The question before us then appears in this shape. If any species of pleasure whatever may be an element of an æsthetic psychosis how does it happen that we come to judge any pleasure to be non-æsthetic?

In the course of examination of others' thought which has preceded this, I have already referred to one characteristic of the æsthetic field, *viz.*, that of permanency. This characteristic is worthy of note because it is directly opposed to the nature of the hedonic field as it is generally conceived. The ephemeral nature of pleasure is the theme of the pessimist; is recognised by the optimist as a fact to be accounted for. The æsthetic field, on the other hand, is felt to be opposed to the pleasure field on this very ground, as is evidenced by the great number of theorists who uphold Universality, Absoluteness, almost Platonic Idealism as the basis of Æsthetics; how could they do so did not their experience give them knowledge of something permanent in the psychoses which they discuss? The æsthetic hedonist then is confronted with the question whether there be any such thing as non-ephemeral pleasure; whether there be a permanent pleasure field which is the Æsthetic field, and to which is opposed the ordinarily recognised field of Pleasure.

[1] Even an Idealist like Prof. Ladd (*Introduction to Philosophy*, p. 331) "yields the right to the Pathologist, from his professional point of view, to call 'beautiful' a preparation of cancerous tissue or of an organ filled with destructive microbes".

It seems to me clear that there is no such thing as a permanent pleasure. Pleasure, as elsewhere shown, is a quality which may attach to any element of consciousness; but not permanently. It is a quality which always fades away under unchanged relations of activity and capacity in the organ involved; the more vivid is the pleasure, other things being equal, the more rapid the fading; the outcome of the fading being either what is called "indifference," or pain. On the other hand, it seems to me equally clear that complexes of mental elements may in arising so arrange themselves by a shifting of the field of contents as to yield new pleasures to take the place of those which fade away, so that a relative permanence may be reached. This permanence, however, will still be only apparent, not real, close examination showing the impossibility of retaining the enjoyment connected with such a complex indefinitely. This kind of pleasure permanence, I think it will be agreed, is in some degree possessed by all important æsthetic objects. But there is another manner in which an effect of pleasure permanency may be produced, and one of very great importance to this consideration. There are likely to occur cases where a content is pleasurably presented whenever it is presented at all; where the revival is pleasurable at the moment of its appearance and does not at any time become painful. Not that it might not be indifferent or painful under the proper conditions, but that in fact it never is, but is withdrawn from consciousness whenever painful and for the most part even when indifferent. Such appearance of stability may readily obtain if the source of stimulus is within our control so that we may avoid the stimulation as soon as it brings other than pleasure to us; a condition which obtains in all fields of art, and pre-eminently so with the arts dependent upon the organ of sight, which thus have an advantage over the arts connected with the ear, where stimulation cannot be controlled by covering the organ (as with the eyelid) or by simply turning the head, but only by much more complex and less automatic movements.

It seems not unlikely that we have here the basis of the distinction which is made between the Æsthetic and the Hedonic. It may be that what is permanently pleasurable in revival (relatively speaking) is termed Æsthetic; and what is not thus permanent is termed non-æsthetic. When we ask ourselves the question: "Is this æsthetic or is it not?" we clearly are dealing with comparison within the field of revival; the lately presented is compared with a standard, and included with or excluded from its class as

the case may be. If this view be correct it is what we call "the lately presented pleasure" which is compared, and that with which it is compared is a field which relatively is permanently pleasurable in revival.

But if the "lately presented pleasure" is in any case excluded from this field of pleasurable revival, it must be because it is in reality no longer a pleasure. How comes it then that we call it a pleasure? Pleasures obtained by direct stimulation are not necessarily pleasures in revival.[1] This change, however, is not always connected with a corresponding dislocation of the *word* Pleasure, which may, and often does, continue to cling to much which no longer brings pleasure for us in its revival. Much that is brought up in revival spontaneously when we think of "pleasure," or when we make recognition of the enjoyments of others, is no longer a pleasant revival for ourselves. These revivals to which the name "pleasure" still clings, but which are not pleasant in themselves, it appears to me are what we cast out as non-æsthetic.

For me apparently the process is this: 1st. I class all that as æsthetic which is pleasurable in revival, with no painful and little indifferent tendency; in other words, *the relatively permanent field of pleasure in revival* is that which I call my æsthetic field; all else is non-æsthetic. What is indifferent in revival I tolerate only as an adjunct; what is painful in revival I cast out of my æsthetic field entirely; I do not judge always a work non-æsthetic because of a painful element in its revival, but I exclude that element as non-æsthetic. 2nd. Those revivals I call hedonic and not æsthetic to which the name "pleasure" clings in any way, either because I remember the original to have been pleasant or because of the recognition of the enjoyment which they bring to others, but which for me in revival are not pleasant but indifferent or positively painful.

Now all this refers to and describes the field of æsthetic judgment, but, as already noted, is strictly speaking apart from the field of actual æsthetic presentation. Every

[1] It must be noted here, as I have argued in my discussions concerning Pleasure, that a revival is not necessarily pleasurable, because the impression of which it is a revival was pleasurable; nor was the original impression necessarily pleasurable because the revival is so; the pleasurableness of any mental element depends upon conditions which may alter from time to time so that recurrence of a content does not necessarily imply the recurrence of the Pleasure-Pain quality which held with any one impression of that content.

argument goes to show that in the latter any pleasure which is a pleasure at the time for the one to whom the æsthetic object is presented, does have to do with the make-up of the essential nature of the æsthetic effect. The difficulty which we have been considering would, therefore, appear to arise from a failure to distinguish the field of Æsthetic Impression from the field of Æsthetic Judgment. From the former no pleasure that occurs for an individual at a given moment can be excluded. From the latter all that is not pleasurable in revival is to be excluded, and this cuts off much to which the name "pleasure" persistently clings.

The relative permanency of the æsthetic field, as opposed to the ephemeral nature of ordinary pleasure thus explained, gives us then apparently a solution of the difficulty which remained in the defence of hedonic æsthetics, and we are led to the general statement: *Each one's field of æsthetic judgment is his relatively permanent pleasure field of revival.*[1] I say *relatively* permanent because it is very evident from the nature of pleasure that true permanence here is impossible of realisation. If each individual pleasure is ephemeral so must the pleasures of revival be ephemeral *per se;* there will, however, always be revivals which are pleasant for the time, and objects which are judged to be æsthetic will be those which in reflexion are pleasurable at the time of their revival. It will be apparent, therefore, that this æsthetic field, if I have described it correctly, must be constantly changeable as we have found it to be. It must alter with those conditions that render variable the nature of the revivals we are to find pleasurable. The racial changes from age to age which development implies, with the necessarily connected alterations of mode of life and habit of thought; the differences of national life, of education, of occupation, between tribes and families; the differences of environment, of habitat, of wealth; the differences of individual life, and, in that life, of years—all should show us differences of standard as to what is æsthetic; for each will show differences in the character of the mental revivals, which will be pleasurable. Who can deny that just such alterations of the æsthetic standard are to be found varying in relation to the differences of life and thought thus sketched out? For each man there is indeed, for the time

[1] The reader will bear with me if I again remind him that this is not the same as the field of the revival of pleasures as often understood, *i.e.*, of contents once pleasurable but which in revival may not be pleasurable at all.

during which he is engaged in an examination of his mental life, a semi-permanent field of contents which remain pleasurable in revival and which are revived when he questions himself as to what is his æsthetic field. But even this field of the time, when reviewed in retrospect, shows its alteration in comparison with what he can remember to have made up the æsthetic field of the past, and to the fact of this real non-permanency, it seems to me, is due the difficulty which is found in defining the field, so that in reality its description is usually indirect by the statement that one object is, and another is not, within its bounds.

This matter of Æsthetic standards we must consider more at length. As we have already seen, under this view, the field of Æsthetic Impression is a very different thing from the field of Æsthetic Judgment. From the field of Æsthetic Impression (A) we are able to exclude no pleasure, whatever be its character, unless it bring in with it *at the time* an overbalance of pain. Any pleasure which can in any way be brought into connexion with the pleasurable complex so that it forms part of the co-presentation or follows in its associative train, by this fact becomes part of the field of Æsthetic Impression. The field will be wider and more vivid than that of Æsthetic Judgment. It will be notably "presentative," as this word is commonly understood in opposition to "re-presentative". The pleasures of sense will enter notably into its complexes as they are the most vivid of pleasures; but, on the other hand, the pleasures of revival, will not be excluded from the field. Many impressions which are pleasant in themselves but not pleasurable in revival and which, therefore, will be excluded from the field of Æsthetic Judgment, will be included in the field of Æsthetic Impression as part and parcel of the totality.

The field of Æsthetic Impression is of far less interest, however, than the field of Æsthetic Judgment; the ephemeral nature of Pleasure, and the variation which this implies in the character of the revivals from which we are able to gain pleasure, would lead us to look for a field of *Individual Æsthetic Judgment of the Moment* (B), covering any complex, wide or narrow, which for the individual gives a pleasant revival at any special time. This must in its nature be very variable; it is the field of revival made use of when we make off-hand judgments in æsthetic matters. But this field will be recognised as abnormal so far as it differs from the *Relatively Stable Æsthetic Field of the Individual* (C), which is the basis of the judgments we make after reflexion and which determines our personal

taste. From this field will naturally be cast out all that reflexion shows us to be painful in any well-recognised case, or indifferent in all but unusual cases. To this field we look in the careful comparison which goes with the analysis of a work of art, while the æsthetic field of the moment is the basis of our casual everyday judgments. It must be noted that we are still dealing with a field which is only relatively permanent, which is liable to change from year to year, and in a lesser degree from day to day. Few of us ever realise this variability of individual taste, but as soon as we do we refuse to be satisfied; we ask for something more certain and stable. We do not care so much what a person's individual judgment is, as what it ought to be. It is here that the opponents of Hedonism make their most vigorous attack. Hedonism, say they, shows us no difference between taste as it is and taste as it should be; if pleasure be your criterion you must give us a guide as to what *ought* to please; otherwise you sweep away all difference between what gratified you and the true and noble Beauty.[1] I am perfectly willing to grant that this objection is well made against any æsthetic hedonism which would at the same time defend Absoluteness of Æsthetic standard; but the weight of the objection bears against Absolutism in Æsthetics and not against æsthetic hedonism, which the facts appear to me to favour altogether. I grant that if one is to be a Hedonist in Æsthetics then he is compelled to abandon Absolutism psychologically, whatever position he may take from a metaphysical standpoint. But the Hedonist in Æsthetics is not at a loss for a standard. His standard, to be sure, is more liberal, is less dogmatic than that which the Absolutist aims to describe, but it has an existence of very decided vitality; it has an objective stability at any special moment which gives it worth, and I find it not less, but more valuable, than the Absolutist finds the hypothetical *quasi*-Platonic Ideals which he aims to approach. To reach this æsthetic "ought" of the Hedonist is no very simple matter. The average man never reaches it. He is the most ardent of Absolutists. His own personal taste he believes to be a reflexion of this certain fixed Absolute, and if others differ from him it is in his view because they are thoughtless or are led by other than æsthetic influences, or are not sufficiently cultivated to appreciate what is good. What we have just here described he is content to do always, *viz.*, to deal entirely with his own subjective

[1] *Cf.* Von Hartmann, *Æs. S. Kant*, p. 354.

standard; when he would have something more stable than individual taste, he canonises his own taste and makes this the standard. The logical Hedonist, when he feels the need of a more stable criterion than his own taste, turns from his own field to an objective field; the field of *the highly cultivated man as he conceives him* (D); the field which every philosophic critic must acknowledge apart from his own individual taste if he is to treat Art subjects with any breadth. The individual peculiarities of his own field, whilst none the less effective for himself, must be treated as individual rather than general; and his criticism be determined by reference to a broader field which contains all that is common to those for whom he speaks. It is not often, however, that he himself recognises the non-personal nature of this standard.

This standard, it must be seen, is still changeable, unstable; but it is *relatively* unchangeable and stable. It must vary with width of experience, of education, of refinement. It changes as a person limits his notions of life and of the universe, or as his views become broader and more sympathetic. It alters with his change of conception as to what is worthy in the world surrounding him, and as to the sincerity and value of other people's beliefs, and in the end it will be found to be largely determined by his ethical conceptions. As Wundt says, "Effectiveness of higher æsthetic representations depends always upon the arousal of moral or religious ideas".[1] It is thus that Taine, though no hedonist, would have us measure a work of Art by its importance and beneficence, that is, its power to develop and preserve the individual and the group in which he is comprehended.[2] It is thus that Fechner would have us make our own final standard of Æsthetic valuation dependent upon our conception of what on the whole has the best outcome for the well-being of mankind for Time and Eternity.[3]

In emphasising the value of the recognition of others' standards, however, we must not overlook the fact that individuality of field is none the less important, for upon it is dependent *the ideal æsthetic field* (E). This Ideal field, from our standpoint, must be a variable one differing for each individual; no Absolute as usually conceived; no fixed objective Platonic Ideal towards which we weakly strain, but

[1] *Elements of Phy. Psy.*, ii. p. 221.
[2] "Ideal in Art."
[3] *Cf. Vors. d. Æst.* End of vol. i.

the field which in some direction differs from the normal field and in which direction the individual feels that the world *ought* to agree with him. Each one of us, however prosaic, has some sort of an Ideal field of this kind; non-agreement with it in others looks like Æsthetic error. So firmly rooted is this belief in one's own Ideal that intolerance is proverbial among artists and connoisseurs; intolerance which is often amusing to one who looks at the subject from a student's standpoint. Once in a while an individual Ideal when expressed enlightens the world of Art. The artistic genius is the prophet who shows to others an Ideal field which they recognise as effective for themselves, and which but for him would have been unknown to them. To express his own ideal must the artist work. He must indeed produce effective results in the field of presentative æsthetic enjoyment (A), but if his work is to be of importance it must go beyond the momentary effect; it must compel recognition as part and parcel of the stable field of pleasurable revival (C), and must not stand opposed to the objective standard which is given by recognition of the value of the opinion of others whose cultivation entitles them to speak with authority (D); if, however, the work of an artist is to be recognised as that of a master it must express an Ideal (E) which the common mortal, however highly cultivated, does not and cannot reach of himself, but which he will recognise when it is reached by another as an enlightenment of his own duller conceptions.

In what has preceded it has already appeared that if the hedonistic view be adopted we must look for diversity of opinion, for descriptions of the æsthetic field widely separated and even contradictory, because the æsthetic field is really a very different thing for different individuals. It will be well to note how far this theory aids us in accounting for the existence of the theories which we have already examined while looking for an æsthetic basis. Bald Sensualism need not detain us; although it is worthy of mention as an indication of revolt against those theories which would exclude the sensational field entirely from the Æsthetic, and as implying a conviction that the sensational pleasures really make an important part of the æsthetic psychosis of presentation. Those theories which by over-emphasis of the function of the sense-organ appear to savour of sensualism are in most cases really rationalistic rather than sensational. The *opposition* to sensationalism, on the other hand, however, is important. The casting out of sensational pleasures from the æsthetic field by authoritative thinkers cannot be

ignored; it must have a basis in psychologic experience. In terms of our theory it indicates that many well-marked sensations which are pleasurable in presentation are not pleasurable in revival. It is to be noted that the sense-pleasures which are cast out are those of the so-called "lower senses". The pleasures of retinal or aural stimulation, or those closely connected therewith, are not the ones against which our anti-sensationalist raises his voice. His objection is to the inclusion of the sensations of taste and touch, especially in their grosser modes, and he drags all the rest of sensations after these. This appears to me to explain the whole position. For the developed man of to-day the so-called "lower senses" *do* bring pleasure in presentation, and often in what we may call primary revival, induced by the representation of objects which would produce the presentative pleasure. In revival of reflexion, however, there are many associated psychic elements, largely ethical, which rise in painful opposition to any such cherishing of the revival as continuance of its pleasure implies. The whole mental state can scarcely be a pleasant revival under ordinary conditions, but must generally appear painful; and as such will be cast out of the æsthetic field of judgment.

The elaboration of any theory is dependent upon emphatic processes of reasoning. The writer and thinker on æsthetic theory must have a decided intellectual bent. Rationalism and Intellectualism thus appear natural as far as the writer allows himself to be carried away by the influence of those mental phases which are most predominant for him. Further, the mental states known as intellectual are preeminently those states in which we deal with revivals, and thus one turning to introspection for corroboration of theory finds evidence that the Æsthetic field is intellectual, imaginative, contemplative, as he emphasises respectively the relational side of the contents of revival, the contents themselves, or the fact that his Æsthetic Judgments are connected always with reflexion.

The theory which would identify Æsthetics with Emotionalism is really a Hedonic theory, for it is based upon that mistaken analysis of Emotions which identifies them with, or treats them as, compounds of pleasures and pains. This faulty analysis leads to the use of the word "emotional" to describe roughly any complex of pleasure. The theorist hence naturally calls his pleasurable æsthetic complexes "emotional," and finding upon examination that certain of the typical emotions are distinctly important and relatively permanent in the make-up of his most notable

æsthetic states, he takes this to be sufficient evidence to sustain his position. Formalism, as already noted, seems to result from a grasp of the truth that the basis of æsthetic effect cannot be in the "Content" or in any special limitation of "Content"; that it is based upon some quality which runs through all "Contents". But to most formalists the objections to Hedonism appear too great to lead one to look in that direction for a solution of the problem. The determination of Æsthetics by reference to Ethical or Spiritual types arises apparently from the personal bias of the theorist, for whom everything in life must conform to ethical theory, and from an unwillingness to believe that any field so wide, and which is judged so important by the mass of men, can have any other basis than that which is for him at the foundation of all things. The claim that all usefulness to the observer must be excluded if an object is to be æsthetic—the insistence upon disinterestedness as an element of the æsthetic psychosis—is based upon the fact that pure egoism of all kinds for the serious thinker of to-day is painful in revival because it is obstructive to the sympathetic impulses which are so important to our modern social life. The theory of Passivity, so far as it is not explained by the width of unmarked attention which forms the broad background in the æsthetic psychosis, is probably based upon the psychologic observation that the revivals of states in which we appreciate reaction upon the environment furnish too emphatic and narrow fields of attention, too much concentration, to permit of any appearance of permanent pleasurableness; in other words, the fields of relatively permanent pleasurable revival are so pre-eminently the fields of passive appreciation that ground is given for the hypothesis, which, however, as we have seen, will not bear close examination. The theory of Immediacy indicates an appreciation of the fact that the æsthetic judgment is determined by no complex process of reasoning, is no remote result of intellectual action, but is grasped mentally as simply as the very widest *quale* of presentation, and such a wide *quale* Pleasure is.

Where one makes the distinction between higher and lower pleasures, and bases upon the distinction his definition of Æsthetics, he appears, as already stated, to be merely renaming his terms and restating his problem. He calls those "higher pleasures" which in reflexion appear worthy of continuance because their pleasurableness is not painfully opposed by other associated revivals—in other words, those which are permanently pleasurable in revival; and in so

doing he thus describes his æsthetic field of judgment. As above suggested, theorists who from metaphysical considerations have adopted general Absolutism or Universalism find it possible to make Æsthetics fit in with their formulas, with corroboration from their psychologic experience, which tells them of the *permanency* of the Æsthetic field ; the fact that this permanency is relative only—is apparent and not real—being lost sight of. Further colour is given to such a view by the fact that the Art worker feels that he is aiming to grasp something which exists, of which he has suggestions and for which he makes search until he can lay hold upon it. He works out a veritable blind impulse to create, to produce an object ; knowing not and caring not that the characteristic of this object is to be this,—that it shall bring permanent pleasure in revival to those whom it is to affect. He may and does gain pleasure in his work, but that he feels is not his aim. He eliminates himself and works to produce that which is to affect others. He thus feels that his effort is separated from the production of effects merely agreeable to himself ; that it is disinterested ; that it represents some Ideal common to the race of man ; that his striving is to picture some Universal, some Absolute. This position is strengthened by the fact that the mere grasping of a so-called Universal through its particulars is felt to be of importance in Æsthetics, as is shown clearly in the prominence which is given by so many thinkers to the principle of the " Unity of the Manifold ". The explanation of this prominence does not appear to be difficult but must be deferred.

A most fruitful lesson is to be learned from this whole discussion, *viz.*, a lesson of liberality. As we have seen, the Æsthetic field of childhood is not that of the youth, nor that of youth the same as that of the man of mature years. Differences of cultivation and of point of view must be constantly taken into consideration. We must not expect that others will agree with us in our revival pleasure-getting, except on broad lines. The failure to recognise this fact is often a serious loss. The belief that beauty is something absolute which he has mastered brings to a man fulness of ennui, and too often cynicism when he finds what he has learned to consider pre-eminently valuable begins to pall upon him. Such is the position which too many a critical mind reaches, and which would be avoided could the critic but look beyond the standard which he himself has set, and take cognisance of the manner in which his æsthetic field alters and develops as he grows in constitution of mind

and life. We learn also the futility of attempting to force standards upon others. We too often expect youth, or those of low mental ability, to appreciate beauties which can be grasped only by men of capacity, who have given their years to acquirements which make appreciation possible; and as a result we produce disgust, most seriously opposed to development, or insincere pretence of appreciation which is evidently immoral in effect.

In closing it will be well to say a word in retrospect. We saw at the beginning that non-hedonistic theories of æsthetics as thus far propounded had failed to deal satisfactorily with its problems. That pleasure is always present in all æsthetic psychoses we found acknowledged, and by comparison of the views of thinkers it has appeared clear that no class of pleasures can be held to be essentially non-æsthetic. That there exists not only a theoretic but a popular aversion to the treatment of Æsthetics as essentially hedonic is acknowledged. I have tried to show that the theoretic objection disappears if we differentiate the hedonic field in general from the æsthetic field upon the basis of pleasure permanency in revival, which must belong to the latter and may not belong to the former. I have also tried to show that if this position be correct we are enabled to account for the genesis of many theories which have been defended in the past.

Incidentally it has appeared that the theoretic opposition to hedonic treatment of Æsthetics has been increased, if not occasioned by an incorrect and inadequate view as to the nature of Pleasure-Pain, held by Æsthetic theorists. The still more complete misunderstanding of hedonics by the "unthinking herd," to use Berkeley's term, is sufficient to explain the popular disinclination to the acceptance of an Æsthetics which is based upon Pleasure. Holding pleasure to be a sensation, or looking upon it as an emotion exclusive of sensation, it is clearly impossible to identify with pleasure Æsthetic effects which for the most part deal with what is recognisedly non-sensational, and with what must be classed apart among emotions if it can be called emotional in any respect.

Having reached this position, the natural continuation of our argument seems to require us to show that æsthetic practice conforms with the principles relating to Pleasure-Pain which have been already enumerated, and to this we shall turn in an article to follow this.

II.—LOTZE'S ANTITHESIS BETWEEN THOUGHT AND THINGS. II.

By A. Eastwood.

We saw that Lotze opens his speculations with the proposal to neglect for the time being any inquiry into the content of the ultimate and concrete truths of philosophy; he intends at the outset merely to investigate "the grounds on which in a subjective sense" the certainty of those truths "for us reposes". At first sight it may seem ungracious to raise any objections to this apparently modest demand; but in philosophy it is as dangerous to be content with too little as to want too much, and if, by conceding to Lotze this preliminary indulgence in self-depreciation, we allow him to limit himself to the "subjective sense" of truth, it may very conceivably result in his throwing dust in our eyes and his own. His reason for beginning as he does is contained in the confession that his attitude towards ultimate questions about reality is tentative and not based upon absolute certainty. But is such an appeal to human fallibility permissible? A mathematician or a chemist might without injuring his reputation avow that, as a human being, he was liable to error; but if, on that account, he proceeded to give reasons why he, in a subjective sense, merely *thought* certain things might be true, thereby implying that after all he might be utterly at sea as to the real nature of his subject-matter, he would meet with scant respect. And the philosopher who casts a doubt on the intrinsic certainty of *his* science is still less entitled to a hearing; for philosophy accepts all the data of the special sciences to begin with, and proceeds to make certainty more sure by exhibiting as confirmatory of them the fundamental truths of knowledge and reality as a whole. In the performance of this task its main duty is to show how the contents of experience are enlarged and re-interpreted by reflexion on the fact, disregarded by science, that truths are necessarily for a thinking subject—a very different thing from treating the subjective aspect of knowledge in abstraction from its objective contents. It may be retorted that every philosopher is at liberty to choose his own method, and that if Lotze wishes to begin with an abstraction which he intends afterwards to supplement, I have no right to object. I reply

by pointing out that Lotze's method of beginning virtually amounts to cutting away the ground from under his feet. It is a method which no one would tolerate in the special sciences, and which ought to be recognised as equally intolerable in philosophy. For by postponing the question: What actually *is* philosophic truth? until we have answered the question: What are the subjective reasons for our *thinking* certain things to be true? we at once open the door to the sceptical doubt "whether," to quote Lotze's words on p. 416, "after all, things may not be in reality quite otherwise than thought makes them". Lotze is fully aware of the "barrenness" of this doubt, and rightly shows that scepticism, unless in inconsistency with itself it be based on dogmatism, is doomed to silence. But, owing to his confident belief that the "subjective" side is not the whole of the matter, and that he can, later on, give us assurance of real objective "things," he seems to forget that all the time he is confining his attention to the "subjective sense" he is making that very hypothesis against which the doubts of scepticism retain their full force. The dangers of thus playing into the enemy's hands at once make themselves felt.

The immediate effect of the liberality of Lotze's concessions and the modesty of his own endeavours is to raise a presumption against the objective validity of knowledge, because cognition, by its very nature, must have a subjective aspect. Hence arises a tacitly implied opposition between truth "in a subjective sense" and truth as regards real objects in themselves, which is equivalent to a distinction between the grounds of the belief in the reality of an object and the grounds of the reality of the object itself. Against which insidious supposition it must be flatly maintained that—setting aside as irrelevant accidental circumstances which may have led to the acquisition of a particular piece of knowledge by a particular person—the grounds of a person's belief in the reality of a thing are for that person the grounds of the reality of the thing itself. Or, quite generally, it is impossible to deny that what human beings *believe to be* the truth *is* for them the truth. It is easy to show the futility of the rejoinder that we are here speaking only of relative truth, *viz.*, truth relative to us, and that the truth of absolute reality may be quite different. For this latter distinction between absolute and relative truth is only possible in virtue of the primary relativity of all truth to the mind. The Absolute itself is relative to knowledge, because the relativity of knowledge is absolute. There is no avoiding the fact that reality derives its entire truth from

its reference to our minds. Instead of distorting reality, human cognition gives it its very life. The truth of this remark is always obtruding itself in philosophy, generally in an inconvenient and somewhat unpleasant manner. The difficulty should be courageously disposed of, as soon as it occurs, by a frank theory of the relation of the finite to the Infinite Mind—or to whatever is regarded as taking the place of an Infinite Mind. Unfortunately Lotze postpones his treatment of the subject until he has come to the end of his speculations, and is summing up their results in a philosophy of religion. He seems scarcely aware that he thus falls into an awkward dilemma. If all that he says about "thought" and "reality" in the *Logic* and *Metaphysic* is to square with his religious theory of the relation of the finite to the Infinite Mind, he has virtually settled this latter question before he begins to discuss it; and if, as is really the case, his theory of the human and Divine Minds is set up independently of all his scattered logical and metaphysical utterances on the question of the relation of "reality" to human minds, the justification for these logical and metaphysical utterances is never forthcoming. Lotze seems to have unconsciously succumbed to the temptation to temporise. It is so easy to defer the question of the ultimate significance of thought with a provisional answer. For two facts are dangerously obvious : (1) that our thoughts are limited or finite; (2) that there is in this world of reality something more or other than those thoughts, *qua* finite. Hence, on the easy assumption that what cannot be referred to (1) must be explained by (2), Lotze is always ready to supply the deficiencies of finite thought by an appeal to a "something more," which he finds ready to hand in what "common-sense" calls a "thing". But that is to shirk the difficulty, because it takes for granted, without explanation, the apparent paradox that our thought, though never able to escape its finitude, is yet aware of (2). The only possible explanation is to show that our thought is not only finite, but also, in a sense, unlimited or infinite—which would at once bring us to the relationship of God to man, and so lead to a reconstruction of (2). As long as a philosophy neglects to settle this problem, it cannot hope to invest its conclusions with clearness or finality. Lotze's reluctance to close with this ultimate yet fundamental question to a large extent explains the prevalence of that vague feeling of self-distrust and deference to some superhuman power to which I have alluded. This feeling finds an outlet in the *Metaphysic* in the frequent exclamation: "Reality is

greater than our thought!"—which, in his philosophy of religion, becomes converted into the observation that God knows more than man, or that man possesses in but a faint degree that true personality which belongs to God alone. Every one must recognise the truth contained in such expressions; they do not, however, afford any principle of explanation for philosophical problems. It is only out of the data of human thought that we can understand "reality" and God. If those data contain an *ignotum*, that *ignotum* cannot be explained by what must, *ex hypothesi*, be an *ignotius*. Now Lotze inevitably commits himself to a false explanation of this kind, because by narrowing down thought to its subjective or finite aspect he is compelled to supply its deficiencies by aid of an external world of "things". In the language of religion, the maxim "God knows better" is always looming before his mind as a barrier to the attainment of a better knowledge of God. He seems to think that part of the reality of the Real may consist in its being, for us, incognisable.

And, apart from the dangers for which it paves the way, is it possible to discuss the nature of ideas as though it had nothing to do with the nature of objects? I think not, for these reasons: Call objects A and ideas B; Lotze proposes to treat B by itself; but that is permissible only if it be established that B has a nature of its own and is independent of A; if, on the contrary, A is indispensable for the existence of B—and Lotze insists that ideas must be supported by "objects" in the shape of either "things" or "a single unknown power" (*Logic*, pp. 460-1)—B can only be understood when viewed in its intrinsic connexion with A; to treat ideas *per se* is to make the unwarranted assumption that they have a nature independent of that objective reality which "supports" them. (To the possible objection that two things, *e.g.*, A and B, cannot be viewed in connexion if they cannot be viewed apart, I reply that A and B are not "two": an idea is nothing save in so far as it is an idea of an object.)

There need, however, be no harm in conceding Lotze's postulate that, whatever be "behind" them, it is always with "ideas" that we have to begin, providing that we make it clear that we are granting an absolutely empty concession. "Idea" means that which is referred to a mind; in this sense everything of which we can speak is an idea; but, since this fact of reference to a mind is exactly the same for one thing as for another, to observe that knowledge is of ideas, *i.e.*, of things referred to a knowing mind, is to make a perfectly

identical proposition, which offers no starting-point for a logical theory, much less affords a justification for splitting up reality into two and treating ideas as possessed of an independence of their own irrespective of real "things".

But, as I pointed out above, Lotze imports a good deal of meaning into the expression "we know only ideas". Now as soon as any meaning is allowed to creep into this innocent-looking proposition it must at once be challenged, in order that we may scrutinise the metaphysical assumptions it contains. But it would be an endless business to collect the numerous passages in which Lotze makes use of this phrase, and criticise each distinctive shade of meaning. I therefore proceed at once to criticise that important passage, quoted above from p. 421 of the *Logic*, where he expressly states the significance which the so-called limitation of knowledge to ideas has for him, and thus enables us to see at a glance that his opinion as to the nature of that limitation is really far from being self-evident or a truism. Impartial that statement certainly is ; but its impartiality seems to me to consist in this, that it involves the person who accepts it, whether he elect for the Idealistic or the Realistic alternative, in a hopeless dilemma. Let us take the case of tha Idealist. His knowledge consists of (1) the ideas within his own mind, together with (2) the knowledge that a world external to his own mind does not exist ; but, if he possesses (2), he must also possess something else, *viz.*, (3) the *consciousness that* his ideas are within his own mind ; but it is impossible to know something to be within the mind except by contrast with (4) something known to be external to the mind, which contradicts (2). Of course this argument has been a matter of ancient history, ever since the appearance of Kant's "Refutation of Idealism". The position of the Realist is palpably suicidal. He too (1) knows nothing but the ideas within his own mind ; but he also (2) knows real things as existing external to his mind—which is absurd. And what is the moral of this apparently disastrous conclusion? Certainly not that the truths of philosophy are beyond our comprehension, but simply that we must take the trouble to understand how the fact that we do comprehend them is possible. Instead of taking up haphazard the first popular notion of the relation of thought to "things" which comes to hand, we ought at the outset to settle once for all the significance which the fact that we are conscious beings has for the objects of which we are conscious.

I have tried to show how ambiguous and misleading is the

proposition "all we know of the external world depends upon the ideas of it which are within us"; if it be a sign-post erected at the parting of the ways between Idealism and Realism, it is one of those disagreeable sign-posts which neglect to add the caution that people who follow either direction will end in the mire. The "common ground" on which it is erected is the common prejudice latent in the expression "knowledge under whatever form can never be things in themselves but only represent them". We must now observe what that prejudice is. That knowledge could never *be* things in themselves is perfectly true, because things in themselves are, if they exist at all, a manifold of particulars; whereas knowledge implies a universalisation of particulars, and a *unity* of a manifold, which as such can never *be* a manifold. But just for the same reason it is true that knowledge can never *represent* things in themselves. A unity of a manifold is a whole, one and inseparable; but a whole can no more represent any of its parts than it can be any of them. But surely, Lotze would interpose, thought must *at least* represent things! Let us beware. As I have pointed out above, Lotze establishes these two positions that thought is, in the first place, *only* representative, and, in the second place, is *at least* representative of "things," by forcing us to choose between two "common-sense" alternatives and taking it as a "matter of course" that his two alternatives exclude the possibility of any third. The plausibility of this reasoning is really due to a vicious application of what Hegel calls the argument from the "either . . . or" of the abstract understanding. The demonstration of Lotze's first point seems to be as follows: (1) Thought must in some way be connected with things; (2) therefore it must either (*a*) *be* things or (*b*) only represent them; but (3) it cannot *be* things; therefore (4) it must only represent them. Now (1) and (3) are true, but (4) is false because the disjunction of (2) is incomplete; the true alternative would be —or (*c*) thought must be the unity for which the manifold of things exists. And Lotze's second point, that thought *at least* represents things, is maintained by a similar argument: (1) either thoughts represent things or they do not; (2) the supposition that they do not would be intolerable on many grounds; (3) therefore we must assume they do. Here again the disjunction of (1) is arbitrary or incomplete. It can only be taken as complete if the "not" is that stupid "not" of Formal Logic called the bare or absolute negative of dichotomy. It is, of course, impossible to negate an infinite negative of this kind by a positive proposition such as

(2) ; and it is obvious that with Lotze the negation of the proposition "thought represents things" is not at all formal; it has a very positive content, *viz.*, the idea that between thought and "things" there is an impenetrable barrier. That *this* proposition is intolerable every one must admit; but now the disjunction of proposition (1) is incomplete, and therefore the conclusion of (3) is unproven. Or we may say the argument involves a *petitio principii*, proposition (2) and not bare dichotomy being the real basis of the disjunction.

I have dwelt at some length on this particular fallacy not merely on account of the serious disasters which follow in its train, but also because it is typical of Lotze's usual method of argumentation. It is his constant habit to take up one by one various theories upon a subject, prove that all save one will not hold water, and then assume that that remaining one, usually dogmatically asserted by himself, must be right. It is a method which may be Aristotelian, but it can never be satisfactory; for after all its conclusion is only one, possibly the most plausible, out of a number of particular suggested alternatives, and can never be shown to be the one necessary and only solution. The absolute certainty of *a priori* necessity can only be attained by what has been called a "critical regress," *i.e.*, an explanation and solution of opposing views by an exposition of the grounds out of which the apparent oppositions and contradictions involved in them arise. For example, we can never finally settle the relation of thought to "things" until we have undertaken an inquiry, in the Kantian spirit, into the conditions of the possibility of experience. Lotze neglects to do this; he never undertakes a theory of cognition in that widest sense in which it must embrace within itself cognition of thoughts and cognition of things. His treatment of thought in *Logic*, bk. iii., only recognises thoughts in that narrower sense in which it is already tacitly opposed to a world of "things"; and similarly he treats "things" in the *Metaphysic* in that narrower spirit which is never tired of reiterating "a thought is not a thing". That regress to a higher point of view, from which it is possible to form a synthesis of the two, he holds to be an achievement beyond the power of himself or any other man; but he finds in the sequel, when religious considerations come to the fore, that it is impossible to do without such a synthesis; he is therefore compelled, out of consideration for his previous self-abnegation, to throw the onus of effecting it upon God.

Curiously enough, Lotze has no sooner committed himself

to his fatally biased view of "ideas" than he exhibits a scrupulous anxiety to steer clear of the prejudices latent in the expression "we know *only* phenomena". But, as I have previously pointed out, this discovery that he is dealing with ambiguities only comes upon him as an after-thought; it does not in the slightest degree induce him to reconsider his previous assertions on the representative character of knowledge. His caution, then, on p. 431 only amounts to saying—let us remember that we have not yet committed ourselves to either Idealism or Realism; which, being interpreted by the light of his previous utterances, means—let us conveniently forget that our suppositions as to the representative nature of knowledge involve the dilemma that either "things" are real but unknown (Realism), or "things" are known to be unreal (Idealism). His profuse assurances throughout the *Logic* that his mind is open on the question What is *behind* ideas? are quite gratuitous, because his prejudices on the question: What are ideas themselves? remain unshaken.

How is it possible to understand knowledge when we have made it representative of something which we do not yet know? This difficulty Lotze endeavours to surmount by his famous "metaphysical postulate". Before examining his postulate, let us see exactly where he stands. He insists that we are limited to a "circle of ideas," and thereupon sets himself to explain the significance of that fact.

Can the many persons who admire and accept this portion of Lotze's work explain the following objection, which seems to me insuperable? If a man's cognition were actually limited to a certain sphere, he would not be able to recognise the fact that it was so limited; such recognition could only supervene if at some future time his sphere of knowledge were widened; then and then only could he, in virtue of his extended range of cognition, recognise his former sphere of knowledge as having been limited. This reflexion, which Lotze develops at great length in his speculations on the perception of the dimensions of space, unfortunately does not occur to him while engaged on his present subject. Nevertheless it holds perfectly good of the so-called sphere or circle of ideas. If a man really were "hemmed in" by the "circle," he would never say anything about it, for the best of all reasons—he could not. To be conscious of the contents of our knowledge as being limited to a circle of ideas we must be able to occupy a point of view outside that circle. Every time Lotze declares that he surrenders to the circle, he is giving the lie to his own

words, notably in the passage where he "perpetrates" the circle "with his eyes open"—which is really equivalent to saying that he opens his eyes in order to see that they are shut.

And now to deal with the demand set forth on p. 451 for a "metaphysical doctrine". We have to ascertain, he tells us, the significance of knowledge "in its widest sense"; an excellent piece of advice, and the very thing I have been urging all along. But we are to do it "consistently with those yet more general notions"—how can any sane human being possess notions more general than the notion of "knowledge in its widest sense," *i.e.*, than the notion of the possibility of there being any notions whatever? It is very plain that, when he subordinates his theory of knowledge to certain "more general notions," Lotze is not dealing with knowledge "in its widest sense"; he is dealing with it in that very narrow and (metaphysically) objectionable sense which treats it as the product of a subjective activity of thought, and places it in antithesis to an objective reality of "things". And a treatise in this spirit cannot possibly give an adequate treatment of knowledge, because it ignores the two most important characteristics of knowledge, *viz.*, (1) its capacity to give objectivity or "thinghood" to its data; (2) its power to create a relation and antithesis between an inner and an outer world. Now Lotze, lapsing into the language of everyday life, confuses this distinction between inner and outer with a distinction between internal thoughts and external things, thereby overlooking the significance of the fact that "knowledge in its widest sense" must transcend the distinction in order to make it possible, *i.e.*, must itself be neither inner nor outer, must no more consist of thoughts *qua* internal than of things *qua* external. Thus "external things," which may with some justification be treated as antithetical to "internal thoughts," are by a natural confusion treated as antithetical to knowledge. Or, to view the same fact from the other side, because knowledge is tied down to its "subjective sense," *i.e.*, limited to ideas "within our own minds," this outside, yet necessarily existing, reality must be unknowable.

We have already seen that Lotze finds it necessary to make a step into this region of the unknowable by means of a postulate, but that, however "metaphysical" such a postulate may be, it can only demonstrate its supremacy over the "circle of ideas" in so far as it is logical. Why, then, ought the laws which thought formulates as to the

relation between subject and object to be subordinated to the laws which thought conceives to be exemplified when it observes or supposes that one thing acts upon another? Surely the reverse is true. Ideas may have a multitude of contents besides conceptions as to the laws of the operations of "things"; but the relation between subject and object is the indispensable condition of the possibility of cognising any matter whatever upon which thought can be directed; the laws of this relationship must therefore rank as prior conditions of the very maximum of generality, to which the laws or hypotheses of action and reaction between objects must be subordinated. And to the possible retort that I am confusing the conditions of Being with the conditions of cognition, I reply with the old challenge—distinguish, if you can, that which is from that which is known.

Lotze's fault consists in forgetting that the category of causality, which he makes the basis of explanation of "knowledge in its widest sense," is itself the "work of the mind," and that thought in its "widest" or metaphysical sense cannot be externally opposed to anything. While disregarding these two points, he gives full play to his innate passion for treating everything after the manner of "things," *i.e.*, of objects external to and acting upon each other. Yet at the same time he has an uneasy feeling that he is not doing justice to the unique character of thought, and therefore seeks to allay his uneasiness, not by recognising that thought is not an object at all, but by assuring us that it is an object with a certain character and independence of its own, and by no means an inane and passive *tabula rasa*. Thus, when raising the question how the thinking subject is "operated upon" by the object of knowledge, he observes that thought must be treated as an object which is "receptive" of certain particular "stimuli to its spontaneity". In the thought-content, therefore, which is the resultant effect of an operation of an object on the mind, this *quasi*-individuality of thought must be taken into account. With this half-hearted concession to the constitutive nature of thought we must deny all complicity, because it is based upon the presupposition that thought *has* an objective nature of its own, *i.e.*, apart from its objects, which can be acted upon. Against which supposition it must be urged that the knowing subject *qua* subject, *i.e.*, in virtue of the unity of his consciousness, has no objective nature at all. Thought is not, as Lotze would have us believe, a pair of coloured spectacles which impart their hue to the "real things" we see through them.

But Lotze goes further towards making thought independent and at the same time an object or "thing". After an external stimulus has called forth its activity, thoughts, he tells us, may "have their origin in the constitution of the mind alone". Here again he is converting good "common-sense" into bad metaphysic. Every man knows the difference between ideas "out of his head" and hard facts of external experience. But that there should be a metaphysical difference in kind between thoughts which are directly stimulated by objects recognised as external to the body and thoughts which are not, is not at all obvious, and is a question upon which "common-sense" is incapable of pronouncing any opinion. I suppose it may be fairly conceded to the "materialists" that every thought, down to the very "inmost," has its material aspect, and can be traced to ingredients occupying positions in space. But what has the exact locality of these material processes, or of their originating cause, to do with the *metaphysical* significance of thought? Take place they always must; but the processes are not the thoughts; still less are the thoughts to be identified with the place in which those processes occur. I think we can now see the gross ambiguity of Lotze's talking about thoughts originating "in the mind alone". If we are speaking physically, and mean by "mind" a certain material object, it may be quite right to distinguish stimuli which originate within from stimuli which originate without that object. But when we are talking metaphysically and say, *e.g.*, that an object is constituted as such by its reference to a mind, we are using "mind" in a totally different sense. "Mind" now may indeed "constitute" thoughts, but it has in itself no constitution whatever, in the material sense of the word; it is, *per se*, pure and abstract spirit, incapable of originating a single actual thought, much less a whole world of thoughts. It is because Lotze's view of "mind" is tainted with materialism that he believes in (1) a world of pure ideas, the special property of the mind, and in the necessity of contrasting with this ideal world (2) a world of "real things".

Apart from the above objection, I think there are two fatal defects in the division of the Real into the two distinct spheres of "immutable ideas" and "changeable things". Empiricism can with justice protest that, since the *reality* of any idea consists merely in the fact of its being present to the mind of some thinking being, and since the reality of a material or concrete object consists in exactly the same fact, there can be no difference in kind between the reality

of an idea and the reality of a "thing". Idealism, while recognising the truth of the empirical view, would go on to reinforce the protest against a world of mere thoughts, on grounds of its own. It would admit that reality, reduced to its lowest terms, means reference to a thinking mind—a privilege which both "ideas" and "things" must necessarily share—and would point out that this reality is the primary requisite which every content of thought must possess. But, the Idealist would in the next place show, the world is a great deal more than real; it is ideal. And by that he would not mean that upon a non-ideal or mechanical system has to be superimposed a teleological system of ideals, exhibiting the beautiful purposes which blind matter is designed to fulfil—and ignoring the failures. He would mean that when we only recognise the world as real we only recognise that it exists (we do not even recognise our *consciousness that* it exists); the whole wealth and content of its nature consists in its being ideal. Within this whole, and by virtue of its ideal nature, distinctions arise; one object of thought is different from, and cannot be reduced to another, *e.g.*, an object of which extension is predicated to one of which extension cannot be predicated; that is the whole solution of the popular phrase, so misleading to Lotze, "we cannot reduce things to thoughts".

Let Idealists consider what are the foundations for Lotze's system of "ideas," before they accept him as an ally; otherwise they may discover, when it is too late, that he is a more dangerous friend than many an open foe. For there is no more pernicious enemy to the true Idealism, which finds in thought the Absolute, than that spurious Idealism which invests thought, out of an avowed regard for it, with such attributes as degrade it into an impotent and abstract thought, implying an alien "reality" for its substratum. Moreover, the Idealism which cannot prove itself true of the whole of Reality save by denying the existence of one-half of it becomes at once subjective, and is therefore doomed. (*Cf.* Lotze's *Logic*, p. 431: "Things," he says, "may be mere means to produce in us in all its details the spectacle of the ideal world".) And it is because the true Idealism which holds all thought to be concrete is, according to the common belief which Lotze has done much to encourage, involved in this catastrophe, that I think it the paramount duty of Hegelians to show that they have a right to treat Lotze with disdain, by convincing people that their doctrines are unshaken by his conclusions.

With regard to Lotze's plea, which has excited much

admiration, for a special kind of reality called "validity," I do not think much need be said. Like most conceptions and misconceptions of philosophy, it is really a very old friend, dating from the time of Plato and Aristotle. It is the assertion that ideas are general which constantly springs up side by side with the opposite assertion that ideas are always particular. Isolate the assertions from their surroundings, and the answer to them must always be the same. The bare universal has no more right to any independent reality whatever than has the bare particular. Universal and particular are relative terms, and derive the whole of their import from their relation to each other. The universal is only universal as implying the particular. We cannot first examine universals *per se*, and then go on to inquire whether particular things do or do not "correspond" to them. And if we could, the work would be suicidal; for, once isolate the two, and no possible mechanism could bring them together again; which Lotze realises in his frequent exclamations: "There are not two worlds, but one"—meaning thereby, in his *Metaphysic*, a One Absolute Object, and, in his religious speculations, an all-embracing Absolute Subject. To give a difficulty a name is not to solve it, and the bare universal does not cease to be a chimera because Lotze has clothed it anew with the dignity of "validity".

And now let us turn to the other side of the antithesis between thought and "things," and come to close quarters with this "something more" which is perpetually casting its shadow upon Lotze's "ideas". I have alluded to the embarrassment caused by Lotze's method of keeping it an open question whether this substratum to "ideas" is properly to be described as God or "things". But I think he has so far committed himself to the notion of a causal activity exercised by the substratum upon our ideas as to make its identification with God altogether untenable. The theory cannot for a moment be allowed to hold water that God *causes* the presence of phenomena to our minds, which phenomena are illusory save as a product of God's causal activity. Whether such a theory would be desirable or not, I do not say. I merely observe that it could only be established by the absurdity of representing God as an existent object in the phenomenal world; for it is only such objects which can be *proved* to stand as the causes of which empirical facts are the effects. And, taken as a postulate, it would simply be a return to that pre-Kantian dogmatism which solved all its difficulties by the *deus ex*

machina. Is that the way in which the modern philosopher proposes to reconcile Hegel and Herbart?

Dismissing this possible difficulty, we come to the main ground on which "things" claim to exercise an external influence over thought. Their metaphysical existence is supposed to be necessary in order to account for *a posteriori* knowledge. The element of truth in this reflexion is that it must always be impossible to get *behind* experience; interpret its data as we will, we must always accept them; even the extreme Idealist will, if he be wise, acknowledge his submission to facts; and if people who do not take the trouble to understand him reproach him with determinism, he will not be much disturbed, for Hegel has taught him how to defend the proposition, "the rational is the real and the real the rational". The prevailing element of falsehood which Lotze imports from the empirical aspect of knowledge is the idea that thought must be conditioned by some external objects or an "unknown power". He seems to forget that in trying to supply data or grounds as causes of the data of experience philosophy is attempting a very foolish thing, and committing itself to an endless regress. It is the business of science to carry on the chain of causality as far as it can; the mass of causally related facts thus collected philosophy has to explain, not by adding to the chain another length, which must terminate in the unknown, but by revealing the conditions which make a causal relationship between phenomena possible. The lesson which the "*a posteriori* element" teaches is simply that we cannot get behind the Real, *not* that Reality is grounded upon an unknown other clothed in either a Realistic or an Idealistic garb. And a particular protest must be entered against that latter *quasi*-Idealistic hypothesis as to the unknown, to which Lotze finally inclines. A consistent Idealism cannot allow such an assumption, because it is based on the false idea that the stimulus to experience is "foreign to" the individual mind, and therefore implies the existence of a metaphysically isolated, causative, universal mind. Not that Idealism would identify man with God, but it would explain the possibility of *a posteriori* knowledge by showing that the human mind is endowed with a universal or infinite capacity in virtue of which each new datum of its experience does not stand in a "foreign" or purely external attitude towards it.

To Lotze, as to every other philosopher who talks of a world external to thought, this difficulty must always present itself sooner or later: even granting the necessity of such a

world, how is it possible for us to *think* it? Lotze begins definitely to prepare for the transition from logic to metaphysic in his chapter on the "Real and Formal Value of Logical Acts," where he draws elaborate distinctions between thoughts *qua* processes and thoughts *qua* results, and makes much out of the assertion that judgments and syllogisms, for instance, cannot have a "real" significance, *i.e.*, "correspond" to real objects. Now while readily admitting that the forms of judgment do not = visible objects, we must deny that the fact has any philosophical importance. No thoughts have external objects "corresponding" to them except thoughts *of* external objects; that is the barren platitude which is the sole substratum of Lotze's argument. The plausibility of his contentions is due to a most unwarranted admixture of "common-sense" and science. He makes capital out of the common definition of truth as the correspondence of thought with things, and he presses into service the scientific method of demonstrating a truth about a natural object by a course of proof for each step in which no corresponding event may be found in the history of the object itself. But all this is quite off the mark; it does not in the least invalidate the two propositions on which philosophy ought to insist: (1) that all thoughts are objective, though not all about external objects; (2) that inasmuch as the reality of any thought-content consists in its reference to a mind, all thought-contents are equally real, though one real content, *e.g.*, a syllogism, may not be reducible to another, *e.g.*, a perceived object. The "finished structure" of thought has neither more nor less claim to metaphysical reality than has the "scaffolding". In the language of the simile at the end of the chapter, the "subjective" or "formal" routes by which thought travels *are* quite as "real" and "objective" as the hill-tops which it reaches. Lotze is unconsciously stumbling upon the fact that the real object or *universal* (the view from the summit which is the same for all) is constituted as such by reference to *particular* human minds, and here we see again that he is upon the threshold of a serious question, into which he is reluctant to enter: What is the relation between finite minds and the Infinite? Now, whatever be our views on this relationship, it must always be insisted that "universal" and "particular" are relative terms, and meaningless when divorced. Lotze, while insisting on the obvious fact that the universality and the particularity of thought are not the same, forgets how intrinsically they are connected. After abstracting the subjectivity or particularity from thoughts,

he practically says: "Behold in these objective universals something more objective and universal than" (*i.e.*, *minus* the particularity of) "human thoughts; these universals therefore are the guarantee that beyond our thoughts there is something more, *viz.*, a real world of things".

I have already dwelt upon the importance of this step, and shown how it enables him to invest each member of the antithesis "thoughts *v.* things" with an independence of its own. We have seen that (1) "thoughts to which no things correspond" are either abstractions or else simply thoughts to the content of which the attribute of extension does not belong. We have also noted that the notion of (2) "thoughts and things which correspond to or are parallel with one another" involves an unfair transference of the particularity and universality, which both properly belong to thought, to "things". Let us now look a little more closely into (3) those "things" which have no "counterpart" in thought, or at least have a reality independent of thought. Popular belief of course accepts (3) without hesitation, and with this popular assumption Lotze always so far concurs as to treat the counter assertion of Idealism as a paradox which requires toning down. Against this initial prejudice of his we must protest. Idealism is doing nothing preposterous when it denies the existence of things *per se* independent of thought. And it can enforce this denial without going beyond the data which human cognition supplies. It need not be nonplussed by the common objection—"What of the reality of the universe before thinking beings came into existence?" or be forced to call in the *deus ex machina* of an hypostasised universal mind, independent of particular minds. It has simply to say, with Aristotle, that what is δυνάμει is relative to and explained by that which is ἐνεργείᾳ. The world was what it has become. Lotze generally sees the absurdity of asking what would reality be like if it were not what it is; but one particular form of that absurdity, the question—What are "things" like apart from the work of thought? he treats as quite proper and legitimate.

Trusting that I have already traced at sufficient length the reasons why Lotze is led to find in "change" the key to the pre-eminence of "things" over thoughts, I pass at once to his view of change. Perhaps it savours of ingratitude to quarrel with Lotze on this point, because especial thanks are due to him for his insistence on the fact that metaphysical problems, for Idealists as much as for others, do centre about the import of change; and it is on account of their diffidence or neglect in this matter that most latter-

day Hegelians seem visionary and unreal. Still, Lotze's modes of expression and his leading thoughts on this important subject are disastrously turned awry. It is undoubtedly true and of high significance that the real is in process, *i.e.*, that "process" is an attribute which must not be eliminated from Reality as a whole; but it is also to be noted that thought cognises this process. Now analysis of this cognitive act reveals the further fact that thought is not itself a part of this process, but, on the contrary, the condition of the process being recognised; for it is due solely to the conditioning and processless unity of consciousness that "process" has any meaning for us. Hence we ought to correct Lotze's assertion that change "completely dominates reality" thus: being predicable of things only in so far as they are brought under the unity of thought, change is completely dominated by thought. There is no force in the possible objection that I am confusing two different things —change and the cognition of change. As a colour is no colour save to the eye that sees it, so a change is no change save to the mind which cognises it. We, as thinking beings, can rightly say that changes actually did take place, when, for example, the world was in the gaseous stage, but we are simply interpreting the δύναμις of the world by the ἐνέργεια. To affirm the existence *per se* of a pure δύναμις or ὕλη is preposterous. To the familiar retort that, as the real elements in the flower whereby the eye sees its colour must exist though the flower never be seen, so the real facts which by us are cognised as changes must have occurred before the appearance of even animal life, the answer is—most certainly; but here again those real elements are mere δυνάμεις or potential existences apart from the ἐνέργεια of thought. Change is one of the essential aspects in which Reality presents itself as a phenomenon; thought, being that to which all phenomena must present themselves as to the condition of their possibility, cannot itself be conditioned by a phenomenon.

From a desire to follow Lotze's order of exposition as far as possible, I have left Time to the end, because, although presuppositions as to the import of Time are at the bottom of nearly all that he has been saying on the distinctions between "things" and thoughts, his treatment of the subjects we have been discussing is ended before his doctrine of Time begins. The theory of Time is thus forced into the unenviable position of being either inconsistent with what has gone before, or, if consistent, liable to the charge of *petitio principii*. But, waiving that point, does the chapter on

Time, taken purely on its own merits, force us to a reconsideration of our previous criticisms? I think not. I hold the entire chapter to be founded on a misconception, an utter perversion of the meaning of the doctrine of Time contained in Kant's Æsthetic. Possibly Kant may have insisted on the "subjectivity" of Time too much, and thus given some colour to the erroneous notion that Time is a property of the cognising subject rather than of the phenomenal object; but Hegel had given ample warning of that danger; it is therefore a matter for astonishment to find that Lotze deliberately falls into the snare, and thinks that because Time is not "merely" subjective it is not "merely" phenomenal. The natural outcome of this view is the idea that succession is the property of a "basis of reality" behind phenomena. And so, it would appear, we can know at least one thing about things in themselves, *viz.*, that they are in succession. But what has Lotze been doing? He has been saying: Time is not merely a property of the spectacles through which the mind sees things; it is also a property of the things which the mind sees. Very true; but unless we are to throw all Kant's teaching to the winds, we must doggedly insist that what the mind sees is phenomenal, and that it is the very phenomenality of its objects which constitutes their reality. Thus we see that Lotze draws from a perfectly true statement the utterly false conclusion that Time is a property of the things which the mind sees, *taken in abstraction from* the mind which sees them, *i.e.*, is a property of things in themselves. Thus we see how he illegitimately makes time bridge the chasm between the "circle of ideas" and an imaginary "supersensuous" world, a "real" process of events, to the contents of which he frequently applies the gross misnomer "intelligible". It is because he allows Time to gain a footing in this mysterious "real" background which he posits, that he takes the liberty of setting at defiance the Idealist doctrine of the limitation of the causal relationship to phenomena, and attributes to non-phenomenal "things" a causative influence on our minds.

That such an attitude of "things" towards thoughts is radically false it has been my main business to show. Speaking generally, the antithesis between thought and "things" fails because philosophy cannot begin with an isolated inquiry into either cognition or reality, but must necessarily begin and end with the one inquiry into the cognition of reality. Divorce the two, and they become abstractions which never can *unite themselves*, but have to appeal to a third party to effect their union; and I fail to see

the piety of a philosophy which makes the fact of its own helplessness the ground of an appeal to God.

A word in conclusion on Lotze's appeals to immediate perception. It seems strange that, although he lived at a time when the arrogant claims to superiority on the part of immediate knowledge had recently received their quietus, we yet find the old fallacies reappearing in his works with an air of perfect innocence, as though Jacobi, for example, had never lived and had never been criticised by Hegel. In Lotze's assumption that perception (1) gives assurance of contact with actual fact, the grain of truth is that if we were not capable of immediate perception we should not be able to cognise any truths whatever; the bushel of falsehood is the implied notion that immediate perception, alone, *i.e.*, without reflexion, can tell us the truth about any objects whatever. To the idea that perception may give (2) a miraculous revelation of facts hitherto unknown about "things in themselves," I bluntly retort—"not proven". The union of Being and not-Being in Becoming is not at all miraculous; it is one of the simplest instances of the union of "dialectical negatives". The most telling appeal of all, the appeal to immediacy in the shape of (3) "faith," Idealists have, more than once, thoroughly exposed. Hegel, and recently some of his English followers, have admirably shown that, without doing violence to the religious aspect of faith, we must deny that faith is a special faculty capable of pronouncing upon or adding to the truths of ordinary cognition and reason. Lotze's "faith" is unequal to the task he assigns it. Our assurance of the Real does not arise from contact with something external to thought; just as little is it established by a "feeling of immediate certitude" from within, located in the heart or elsewhere. But Lotze's mind is too deeply imbued with religious associations to allow him to direct upon "faith" the cold scrutiny of impartial reason, and thus he unconsciously makes that "faith," to which he appeals as the ultimate standing-ground of his philosophy, spurious because irrational.

We may, perhaps, find here the explanation of a curious phenomenon. When discussing a problem, Lotze always begins by a destructively sceptical criticism of various recognised opinions on the subject, and then, when we think that he must inevitably abandon the problem in despair, we find him quietly settling down to dogmatise on his own account—appealing to "faith" or a "feeling of immediate certainty," he would call it. Lotze is not the only example which history affords of a man beginning by doubting everything, and ending by believing anything.

III.—THE STUDY OF CRIME.

By Rev. W. D. Morrison.

I.

Roughly speaking the range of this study embraces, first, the movement of crime, secondly, the causes of crime, and thirdly, the repression of crime. The movement of crime comprises its extent, intensity, and geographical distribution; the causes of crime are divisible into personal, social and cosmical; the repression of crime deals with the theory, the methods, and the efficacy of punishment.

Before these three divisions of the subject can be treated in a competent manner they must first of all be preceded by a thorough knowledge of criminal statistics. Even in official quarters in this country very primitive ideas are at present current with respect to the amount of weight to be attached to criminal statistics. It is very frequently assumed that all the inquirer has to do is to go to the figures and to base his conclusions as to the movement of crime upon them alone. The adoption of this method leads to very fallacious results. Before any assured conclusions can be based upon the official statistics of crime careful account must be taken of the manner in which the figures have been affected by external circumstances, of the manner in which they are arranged and of the degree of certainty attaching to the various methods in which offences are classified. Among external circumstances requiring to be taken into consideration, the first in importance are alterations of judicial procedure. It is very common, for instance, for people to assume that serious crime has decreased in England within the last three decades inasmuch as the number of indictable offences has materially decreased in the period referred to. Whether serious offences have or have not diminished in the last three decades is a question which we shall not at present discuss; it is sufficient for our immediate purpose to point out that a decrease in the number of indictable offences cannot be taken as a satisfactory proof of its decay. The annual number of indictable offences has been materially affected within the last thirty years or so by important changes in judicial procedure. As a result of the passing of the Criminal Justice Act of 1856 and the Summary Jurisdiction Act of 1879 a vast number of cases which

used to be tried on indictment are now tried summarily, and all calculations which do not take cognisance of these changes in judicial procedure are bound to be erroneous. In estimating the movement of crime, therefore, the first point to be attended to is the alterations which may have taken place in the methods of judicial procedure, and the first error to be guarded against is the confounding of a mere change in the mode of trying criminals with an actual decrease of crime.

In appreciating the value of criminal statistics another matter of almost equal importance is the introduction of new laws and the abolition of old ones. The abolition of old restrictive laws, as for instance the enactments against trade combinations, and the falling into abeyance of many statutes which are not actually repealed, as for instance the utterance in print or otherwise of treasonable expressions, tend to diminish the number of cases which come before the criminal courts. On the other hand, the introduction of fresh restrictive legislation has the effect of increasing the annual number of offences. The Elementary Education Act of 1870 is an excellent illustration of the way in which offences are increased by fresh legislation. Before the passing of this measure no parent could be punished for not sending his child to school: in 1890 the number proceeded against before the magistrates of England and Wales for neglect of this duty amounted to 80,519. It will thus be seen that legislative changes play a considerable part in multiplying or diminishing the annual volume of offences.

It must not however be assumed as is sometimes done that in order to institute a fair comparison between one period and another all new offences have simply to be eliminated. It not seldom happens that the laws enacted against such offences have been passed in consequence of a real growth in the criminal instincts of the community so far as the offences in question are concerned. The Criminal Law Amendment Act of 1885 is a case in point. This act became law in consequence of a rapid increase in the number of sexual offences, and in order to arrive at a just estimate of the movement of crime within the last twenty or thirty years the cases under this act must be included in the general computation.

Turning from a consideration of the external circumstances which have to be taken note of in interpreting the contents of criminal statistics, let us now examine these contents themselves. It is usual to split up criminal statistics into three main divisions, consisting respectively of judicial statistics, criminal statistics proper, and prison statistics. It is, however, to be observed that this classification of

the material is not followed in the official documents of every country. In the German Empire the line of division between judicial statistics and criminal statistics proper is very clearly defined, in England it is not; and here it ought to be distinctly emphasised that, as far as accurate and scientific arrangement is concerned, the criminal statistics both of Germany and Italy are vastly ahead of our own. Both in Germany and Italy the department of criminal statistics is presided over by officials possessed of an intimate and comprehensive knowledge of criminal problems; accordingly the *Kriminal Statistik des Deutschen Reichs* and the Italian *Statistica giudiziaria penale* are veritable storehouses of admirably arranged information respecting the movement of crime. Of the two the Italian statistics are the more complete, and may be pronounced to be at present the best in Europe. The arrangement of English criminal statistics has remained practically unchanged since their institution in 1857. Since that period much progress has been made in statistical method; the Germans and Italians have availed themselves of it, but England as usual remains lethargic and indifferent.

These remarks on the comparative value of the statistical documents relating to crime are somewhat of a digression. We shall therefore resume our examination of the contents of criminal statistics by pointing out some of the differences between Judicial statistics, Criminal statistics, and Prison statistics. Judicial statistics are intended to exhibit the operation and administration of the criminal law. Accordingly they are concerned with the number of crimes committed and the nature of those crimes; the number of offenders apprehended and the nature of the offences; the percentage of offenders convicted and the nature of the punishment inflicted on them. The information obtained upon all those points serves to show how the criminal law works, and how justice is being administered. On the other hand, Criminal statistics are occupied not so much with the offence as with the person who commits it. The first set of statistics deals with crime, the second with the criminal, and the immense value of the latter consists in the fact that it is only through a knowledge of the personal condition of the criminal that we arrive at the causes which tend to produce crime. Let us go to the Italian returns for an example of the manner in which the personal condition of the criminal is exhibited. In these returns we find, in the first place, the offender's name, birthplace, commune, province, and date of birth. In the case of a foreigner the country only is given.

In the second place, we have an account of the offender's civil condition, whether he is legitimate, legitimated, or illegitimate; whether he is single, married, a widower; has children or is childless. In the case of juveniles it is set down whether the offender has parents, relatives, or guardians, and whether he lives with them or not. The next point on which information is given is the occupation of the offender, whether he is an employer or employed, and what is the nature of his calling. Then comes an account of his penal condition, that is to say, whether he is or has been under police supervision, whether he has been subjected to conditional condemnation, whether he has been previously imprisoned, whether he has been under detention in a reformatory school, and so on. After this is a list of his previous convictions (if any), as well as an account of the nature of these offences, and the dates of their committal. Finally comes the indictment, the conviction, and the time and place of the crime for which he is in custody.

It will be observed that the Italian criminal statistics are silent with respect to the religious profession and the educational capabilities of offenders; nevertheless their contents are amply sufficient to show that the object of Criminal statistics proper is to provide materials for estimating the effect of personal, social, and cosmical causes in the production of crime.

Prison returns partake partly of the nature of Judicial statistics, and partly of the nature of Criminal statistics. Prison statistics deal with the machinery of prison administration in much the same way as judicial returns deal with the machinery of the penal law; and, on the other hand, they deal with the personal condition of the convicted offender on very much the same lines as criminal statistics proper. Accordingly in Prison statistics we have an account of the annual cost of the administration, and of the number and duties of the various officials of which it is composed. This is the machinery of the Prison system. After the machinery comes the material on which it has to work, that is to say, the persons sent to prison. Prison returns therefore treat of the numbers annually imprisoned, and of the length and nature of the sentences pronounced upon them. These returns also furnish an account of the age, sex, education, religion, nationality, as well as the previous convictions, conduct, and state of health of the imprisoned population. In the returns of the Discharged Prisoners' Aid Societies an account is given of the manner in which prisoners are assisted after their liberation, and the annual report of the

Inspector of Reformatory and Industrial Schools furnishes a list of the percentage of juveniles who again become criminals after passing through reformatory institutions. Before concluding this account of prison statistics it is requisite to call attention to the fact that these returns must not be confounded with the general statistics of crime. This is a very common form of error. It is very often assumed, for instance, that crime must be decreasing, inasmuch as the total prison population has decreased, or inasmuch as the daily average of persons in prison has gone down. Both these methods of reasoning are fallacious. The rise and fall of the prison population depends upon many other circumstances besides the growth or decay of crime. Imprisonment is only one of many ways for repressing offences against the criminal law. In addition to imprisonment the criminal law uses such methods as hanging, fining, sureties, conditional condemnation, reformatory and industrial schools, private homes for juveniles, and so on. If these methods are becoming more and more substituted for imprisonment the prison population must decrease even if there has been no diminution either in the amount or in the intensity of crime. Let us illustrate this by an example. In the year 1868-9 the number of convictions in the courts of summary jurisdiction in England and Wales amounted to 372,707, and out of this number 95,263 or 25 per cent. were imprisoned. In the year 1887-8 no less than 538,930 convictions were recorded, but out of this number only 78,438 or 14 per cent. were imprisoned. These figures incontestably show that there has been a very considerable increase in the number of offences subject to summary jurisdiction since 1868-9, but in the face of this increase in the total number of summary offences the prison population has decreased to the extent of 11 per cent. It is evident from these statistics that the number of persons sent to prison is not to be accepted as an accurate criterion of the annual amount of offenders summarily convicted. Again the growth or decay of crime in seriousness cannot easily be determined by prison statistics alone. In recent years magistrates have received enlarged powers for fining offenders in cases where imprisonment used to be the only method of dealing with them, and in recent years great changes have also taken place in the treatment of juvenile offenders. It is now a very common custom for magistrates to cause charges of felony preferred against juveniles to be withdrawn and charges of a lighter character to be substituted for them. The object of this alteration in procedure is to relieve the magistrate of the necessity of sending the young

offender to prison, and he is accordingly handed over to an industrial school or private institution instead. In this way the prison population is diminished, although there may be no diminution in the gravity of crime. It is also to be observed that the numbers in prison on a given day, or the daily average of prisoners, are very largely determined by the duration of sentences. It is therefore impossible to form an opinion respecting the movement of crime based upon the daily average of persons in prison. If sentences are being shortened the daily average in prison will decrease even if no decrease is taking place in the extent and seriousness of crime, and if sentences are being lengthened the daily average will increase even if there has been a decay in the amount and intensity of crime. In other words, the daily average is absolutely worthless as a criterion for estimating the movement of crime. Summing up the whole subject of the relations between the prison population and the statistics of crime, we arrive at the general conclusion that the number of offenders annually admitted to prison, as well as the daily average of offenders in prison, is too entirely dependent on judicial procedure and judicial sentences to be of substantial value in estimating the growth or decrease of crime.

II.

These preliminary observations on the nature and value of criminal statistics have placed us in a better position for considering the study of crime in the three aspects of it to which allusion has already been made. It will be remembered that the first of these aspects was the movement of crime in extent, intensity, and geographical distribution. How is this movement to be determined? There are three methods by which this may be accomplished, namely, by an examination of the cases reported to the police, the cases tried, and the cases convicted. Every proceeding of a criminal character passes through the successive phases of report, trial, condemnation or acquittal: each of these phases taken singly is more or less imperfect as a criterion, but all of them taken together, although falling short of mathematical exactitude as we shall presently see, are nevertheless a sufficiently close approximation to the facts to enable us to form some sort of an estimate as to the movement of crime.

The number of cases reported to the police has the merit of being the fullest account of serious crime. As soon as an offence has been committed the first step which usually takes place is to report it to the police. In many instances this

action has no practical result, inasmuch as it neither leads to the apprehension, trial, nor conviction of the offender. All the same the offence is recorded if indictable in character, and the total annual number of such offences is the most complete official register of the amount of serious crime. Yet this record is in several respects inadequate. It is almost needless to advert to the fact that many crimes are committed which are not reported to the police. A statement was recently made at Birmingham by Mr. Chamberlain that in the course of two years the Society for the Prevention of Cruelty to Children had dealt with no less than 8810 cases of criminal cruelty, but out of all this number only 1497 were brought to the notice of the police. Multitudes of cases of a criminal character never reach the ears of the authorities, and are consequently unrecorded. In cases of theft, for example, it often happens that the injured person is either unconscious of his loss or at least of the manner in which it occurred: or if he is aware of these things he does not trouble to report the affair to the police. In a recent report to the Town Council the Chief Constable of Manchester gave a very startling account of the number of frauds perpetrated in that city which never came officially before the criminal authorities. He stated that in 1891 the sums of money of which commercial houses in Manchester were robbed by persons of good education alone amounted to upwards of ninety thousand pounds, and that in the majority of instances the perpetrators of these robberies were not prosecuted. It follows as a matter of course that none of these cases appear in the annual statistics of offences reported to the police, although they constitute an important item in the annals of crime. But, apart from these inevitable omissions in police statistics, it is also to be observed that as far as England and Wales are concerned official returns of offences reported to the police are only made when these cases are considered to be of an indictable character. No record is kept of summary offences when the offender is not tried; and as summary cases although lightest in nature are largest in number, it is manifest that the annual number of reports to the police is not altogether an adequate index of the total amount of crime committed. At best it is but an approximation. The actual amount of crime committed is always immensely in excess of the statistics of recorded crime.

Cases tried stand upon a somewhat different footing to cases reported. All such cases, whether indictable or summary, are tabulated in the official statistics of this country. This makes them a more valuable criterion of the total

amount of crime than the reports to the police. Attempts have recently been made to get at the total amount of crime in England and Wales by mixing together the number of cases reported to the police with the number of summary cases tried, but the results of such a proceeding must be unsatisfactory. In all matters of this kind the three distinct phases through which a criminal case has to pass must be kept rigidly apart, otherwise inextricable confusion is certain to arise. Each phase of a criminal case sheds light upon the other, but when all its aspects are thrown together in the hope of arriving at some total computation which in the very nature of things cannot be attained, the only possible result is a kind of composite statistical photograph, which neither represents one thing nor another. One or two points affecting the value of cases tried as a criterion for estimating the movement of crime must now be referred to. It is well known that a certain percentage of false and frivolous charges figure among the cases which come before the criminal courts, yet all these charges must be included in any calculations based upon the number of cases tried. Another important matter must also be noted. The quantity of cases for trial depends to an enormous extent on the efficiency of the police and on the nature of the instructions issued to them. Where the police force is in a state of inefficiency the annual record of cases tried will afford a very inadequate conception of the extent and ramifications of crime. In such a posture of affairs innumerable offences will escape detection, and it is possible for a country to be riddled with the operations of criminal offenders whilst the statistical registers continue to exhibit a small percentage of cases for trial. This dangerous condition of things may likewise arise from another cause, which again affects the value of trials as an absolutely accurate standard, namely, the willingness or unwillingness of the population to come forward as witnesses. If the population is to any considerable extent unwilling to give evidence, as is the case with respect to certain forms of crime in Ireland and Italy, the yearly total of offences tried will be very seriously impaired as a test of the growth or decay of crime. Finally, the instructions issued to the police have an important bearing upon the number of cases tried. In almost all cases of drunkenness, importuning, breaches of the peace, and so on, the initiative rests with the police, and it depends almost entirely on the nature of police instructions whether these and similar offences will or will not figure largely in the statistics of crime. These instances are a sufficient indication of the variety of con-

siderations which must be reckoned with in estimating the movement of crime upon the basis of cases tried.

From trials we pass on to convictions. What is their value, and what are the hindrances which stand in the way of appraising it? So far as they extend, convictions represent the nature of the offences committed in a community with much greater accuracy than is possible in the case of offences tried or reported to the police. Until an offence has been submitted to the judgment of a properly constituted tribunal it is not possible to say with reasonable accuracy in what the offence has really consisted. The evidence bearing upon the case has not undergone that indispensable process of sifting and scrutiny which only a court of justice can adequately perform. Thus it not infrequently happens that a person is tried for one kind of crime and convicted of another, an indictment for murder resolves itself on trial into a case of manslaughter, and a charge of burglary resolves itself on examination before the courts into a case of simple theft. On the other hand, it is a very common practice, as has already been mentioned, to withdraw charges of felony against juvenile offenders which the police are perfectly able to substantiate in order that the young delinquent may be spared the odium of imprisonment and all the other risks which this method of punishment involves. In addition to being affected by questions of age, the criminal courts are also affected in their decisions by considerations of sex. At the present time in courts of summary jurisdiction in England and Wales about one man in every six is acquitted of the charge preferred against him, whereas one woman in every four is acquitted. It is to be inferred from this that magistrates are much more unwilling to convict women than men, for it is highly improbable that the evidence on which the charges rest is weaker in the one case than in the other; in fact, the presumption is quite the other way. The percentage of convictions is also affected by the constitution of the court and the nature of the crime. Evidence which will satisfy one magistrate and one set of jurymen will not satisfy another magistrate or another set of jurors, and testimony which will be regarded as ample in a case of theft will be looked upon as quite inconclusive in a trial for murder.

It follows from this brief examination of the statistics of convictions, trials, and cases reported, that each of these returns possesses its special import and its peculiar defect, that none of them by itself is to be accepted as an absolute test of the movement of crime, but that all of them, when interpreted by the light which each sheds on the other,

constitute a valuable index of the criminal condition of a community.

One or two additional observations still require to be made as to the methods of estimating the movement of criminality. The first of these is that a distinction must be made between persons and offences: the two must not be confounded. It very often happens that two or more offenders are tried for the same offence; and, on the other hand, it also happens that one person is tried for several offences. It is also to be noted that the number of offenders tried annually must not be regarded as so many different individuals. The same person may be tried many times in the course of a single year. According to a petition on drunkenness presented to the House of Lords in the session of 1891, many instances occur in which one person is convicted for drunkenness as many as thirty-two times in one year; in estimating the value of criminal statistics, it has accordingly to be borne in mind that these thirty-two cases only represent one offender.

Another important consideration must also be mentioned. It may be accepted as a general principle that the rise or fall of serious crime can be gauged with much greater accuracy than the movement of petty crime, inasmuch as criminal statistics increase in exactitude in proportion to the gravity of the offence. According to this principle, the statistics of a crime such as murder are a much closer approximation to the actual facts than the statistics of offences such as drunkenness. Murder is a crime which immediately creates a profound commotion among the community, and is almost certain to come before the eyes of the criminal authorities; it is, therefore, reasonable to assume that the number of murders annually reported to the police represents with considerable accuracy the actual number of murders committed: but the same thing cannot be said with respect to drunkenness. Within the last five or six years the number of cases of drunkenness has, on the whole, decreased in England and Wales, and if we had only criminal statistics to go by, it might be inferred that the evil of drunkenness was abating. But the statistics of the Registrar-General are, to some extent, hostile to this view. In the Fifty-third Annual Report on Births, Deaths, and Marriages, the Registrar-General says that "the deaths attributed to intemperance have increased year by year since 1884, and in 1890 were both absolutely and relatively to the population more numerous than in any previous year. They

numbered 2037, and were in the proportion of seventy to a million living, the highest previous rate having been fifty-five, and this in the next preceding year, 1889." If, as the Registrar-General shows, the deaths due to drink are increasing, it is hardly likely that intemperance is on the decrease: it is much more probable that the proper explanation of the figures to this effect in the criminal statistics is that the police are adopting more lenient methods with the intemperate—that they are, in fact, less disposed to arrest them at present than they were a few years ago. In estimating the movement of offences, we have accordingly to bear in mind that, as a rule, the graver the offence the higher is its value as an index of the growth or otherwise of crime in extent and intensity.

After having enumerated the principal circumstances which have to be taken into account as affecting our judgment on the movement of crime, we now come to the final question whether it is possible, on comparing one period with another, to say, with certainty, whether crime is increasing or decreasing. In my opinion, it is not possible to be absolutely certain upon this most important point in moral statistics. When the periods selected for purposes of comparison are very brief, as, for instance, the two halves of a decade, the effect of disturbing factors can be, to some extent, allowed for; but, on the other hand, five years is too short a time to base any satisfactory conclusions on in such a matter as the growth or decay of crime. In order to arrive at a trustworthy estimate upon this important subject, the range of the comparison should embrace two generations, or, at the least, two decades. Unfortunately, when we attempt to compare one decade with another, difficulties of a very formidable character at once present themselves. As has already been pointed out, criminal statistics, when they cover a considerable period, are so enormously affected by changes in law, changes in procedure, changes in the attitude of the authorities, changes in public feeling, and, to some extent, in the conditions of life, that a comparison of their contents cannot be accepted as conclusive evidence of the rise or fall of crime. A proof of this inconclusiveness is seen in the contradictory results at which equally competent investigators arrive when they discuss the question of the growth or decay of crime. With respect to France, M. Joly contends that crime is increasing, M. Tarde that it is decreasing. Prof. von Liszt asserts that crime is increasing in Germany, Herr Starcke says that it is not; and,

while Prof. Ferri maintains[1] that the apparent decrease of homicide in Italy is a "statistical paradox," Dr. Bosco is equally positive that the decline is real. When writers of such admitted distinction reach such opposite conclusions, it is evident that the statistical material on which these conclusions are based is of a somewhat indecisive character, and does not readily lend itself to the construction of dogmatic statements.

In England the indecisive character of criminal statistics as a test of the growth or decay of crime is very imperfectly recognised. Hence it comes to pass that the public is frequently asked to accept dogmatic assertions on a subject which does not admit of being dogmatised about at all. Within the last twenty years or so a great many alterations have taken place in criminal law and procedure, in the temper of the authorities, and the tone of public sentiment with respect to crime and criminals. The extent of these alterations it is impossible to measure, but until this preliminary step has been taken, we are not in a position to say whether crime has increased or decreased within the last twenty years. One statement, however, we may venture upon making. Within the last decade the total number of offences of all descriptions has steadily and vastly increased, and if we take the criminal statistics as they stand, a comparison between the most serious offences against person and property (the first two classes of indictable crimes) will show that these offences have increased both absolutely and relatively to the population in the decade 1880-9 as contrasted with 1870-9. According to the principle that criminal statistics increase in value in proportion to the gravity of the offence there is little ground for asserting in the face of these facts that crime has decreased in this country in recent years. It is, however, a much safer method not to attempt to force figures to produce a result which the disturbing influences affecting them make it difficult for them to yield, and it is better at once to recognise that the most which can be got out of a comparison of the criminal statistics of two distinct periods is a reasonable approximation to the facts, but never an absolute certainty. In using criminal statistics as a criterion of the moral condition of the country it is essential to bear this circumstance in mind.

Something now requires to be said respecting the geographical distribution of crime. It is a well-known fact in

[1] For Ferri's views, see *La Scuola Positiva*, anno i. p. 102. This is an excellent periodical on criminal matters.

natural history that plants and animals are distributed over the globe according to the degree in which the soil, the climate, the configuration of the country, and so on, is adapted to their existence. It is the same with crime. Crime is geographically distributed in nature and extent all over the world in proportion to the vitality of the various potentialities, whether cosmical, social, or individual, which tend to increase or check it. We have only to look at the criminal statistics of different civilised communities for convincing evidence of the truth of this dictum. At the same time it is to be observed that these statistics cannot be used for purposes of international comparison in so far as the extent and intensity of crime is concerned. The reason of this is obvious. In no two countries is the criminal law exactly the same, in no two countries is crime classified in the same way, in no two countries is the criminal law administered in the same spirit, or regarded in the same light by the population. It has been truly said by Dr. Starcke in a report presented to the International Statistical Institute on *Die wichtigsten Elemente der Criminal Statistik* that international statistics will only be comparable when all nations have the same criminal law, the same judicial administration, and a police force organised upon the same principles. At present the very greatest diversity exists among civilised communities on all these matters, and it is highly improbable that at any future period this condition of things will be superseded by an all-round uniformity. Differences of race, differences of social structure, differences in historical development, have all contributed to the formation of distinct types of criminal law and criminal administration, and as nations move along the paths marked out for them by their previous history, it is very unlikely that these differences will be any less in time to come than they are at present. But until these differences are obliterated it will be impossible to have a uniform criminal law, and therefore equally impossible to have international criminal statistics which admit of comparison in so far as the amount and gravity of crime is concerned.

International criminal statistics, while not admitting of comparison on the important points just mentioned, are yet capable of shedding considerable light on many of the probable causes of crime. When, for example, we see the same kind of crime increasing or decreasing in several communities at the same period, it is very probable that this general movement is due to the same general cause. International criminal statistics are also of material assistance in

enabling the investigator to estimate the effects of age, sex, occupation, social and material conditions, commercial prosperity or depression, and so forth, on the criminal tendencies of the population. In short, international criminal statistics may be usefully employed in all inquiries respecting the causes of crime, but they cannot be accepted as a conclusive test of the position of nations in the scale of criminality.

Crime, however, is not merely unequally distributed among different nationalities, it is also unequally distributed among the various divisions of the same state. Here the difficulties which invalidate international comparisons do not exist. The different departments, divisions, or counties of the same country are all subject to the same laws and the same methods of criminal administration, and it therefore becomes possible to institute useful and instructive comparisons between them. One of the first facts which strikes the investigator in this department is the extraordinary differences between one region and another with respect to the extent and nature of crime. In an interesting article[1] on crime in Italy, Dr. Bosco has shown that whilst there are only two cases of homicide to every 100,000 of the population in the province of Como, there are no less than fifty cases of homicide in the province of Girgenti. He has also pointed out that assaults and offences against morals are distributed in somewhat the same way as attempts against life, that is to say, they diminish in number as we proceed from the south of Italy to the north. On the other hand, this notable divergence in the territorial distribution of crime in Italy does not apply to the same extent to offences against property, and it cannot be said that thefts are more common in the north of Italy than in the centre, and in the centre than in the south. In the course of a valuable article[2] on the results of recent criminal statistics, Dr. Földes touches upon the distribution of crime in Germany, and shows that it is most prevalent in the provinces bordering on the Russian frontier, and lowest in the west and north. In some of the larger divisions of the German empire, as, for instance, Prussia and Bavaria, the amount of crime is almost double what it is in the smaller states, and similar diversities exist with regard to the distribution of juvenile and female crime. In France and England the same differences in the distribution of crime are to be found when we compare one department with another, or one

[1] See *Rassegna di Scienze Sociale e Politiche*, Dec. 15, 1891.

[2] See *Zeitschrift für die gesammte Strafrechtswissenschaft*, Band xi.

county with another. Why crime should be so unevenly distributed in the same country is a very interesting question: many causes are in operation to produce such a result, but, undoubtedly, one of the most important is the degree of density of the population. Other things being equal, a dense population has a tendency to produce more criminals than a thinly peopled district.

III.

In the preceding remarks on the movement of crime we have set forth some of the principal methods which must be observed in estimating it, as well as the degree of exactitude attaching to all such estimations; but it yet remains for us to examine a few of the chief causes which enter into the production of crime and criminals. It has already been mentioned that the causes of crime are divisible into three fundamental classes, namely, personal, social, and cosmical. This method of classification is, on the whole, the most definite and convenient. It is, however, necessary to observe that it is often impossible to draw a dividing line between these three sets of causes; the separation of them is useful for purposes of exposition, but must not be assumed as implying an equally distinct separation in fact. With these preliminary observations we shall now proceed to speak of the personal or individual factors of crime. These may be defined as consisting of sex, age, physical and mental constitution. The effect of sex on crime is visible in the smaller proportion of female criminals than males. Among the general population of most countries the female population equals or exceeds the male population, but among the criminal population of every community the number of males exceeds the number of females. To what influences is the smaller criminality of women to be ascribed? Some assert that it arises from a superior moral disposition, and that this superior moral disposition is a result of the altruistic feelings arising out of the duties of motherhood. Others question the belief that women excel men in moral attributes, and ascribe the inferior criminality of women to physical and social causes. Whatever may be the elevating effects of motherhood on the moral character of women, it must be admitted that this is not the only reason women are less disposed to crime than men. It is unquestionable that women are incapable of committing many crimes of a certain nature, owing to the want of physical strength. Murder, burglary, housebreaking, assault—and, in fact,

almost all crimes of violence—require an amount of bodily effort which women, as a rule, do not possess. It is, therefore, contended by writers such as Quetelet and Von Oettingen that want of power has probably as much to do with the small percentage of females convicted of crimes of violence as want of will. In support of this contention it is pointed out that the proportion of women who commit crimes of violence which do not necessitate the exercise of physical strength is very high indeed. In France, for instance, no less than 75 per cent. of the offences against children are perpetrated by women, and women are also responsible for 70 per cent. of the cases of murder by poisoning. It would accordingly seem that where physical impediments do not come into operation the contrast between males and females in the scale of criminality is apt to disappear.

Social conditions also tend to reduce the percentage of female offenders as compared with males. Owing to a variety of causes women lead more secluded lives than men, and are brought less into contact and conflict with the hard realities of life. Most of their time is spent in the home, and most of their duties are connected with its internal management. The duties and cares of motherhood bind them to home by the strongest of human ties, and one of the results of this is that women who are mothers are, according to M. Bertillon, not half so criminally disposed as women who are childless. On the other hand, it is universally admitted that where women have neither home nor family ties and live an isolated and independent life in great industrial centres they immediately begin to form a larger percentage of the criminal population. It would therefore appear that in all cases where women are subjected to the same social and economic conditions of existence as men their criminal tendencies become more pronounced, and that the disparity of these conditions must be set down as one of the factors operating against the production of female crime. Before leaving the subject of the relations between sex and crime we may remark that whatever may be the causes which make women less criminal than men the fact remains that they are so, and that in England at the present moment it is five times less probable that a girl will become a criminal than a boy.

Intimate as are the relations between sex and crime the connexion between age and crime is perhaps closer still, and Quetelet is justified in observing that "among all the causes which tend to develop or arrest the propensity to crime, age is unquestionably the most powerful". This

arises from the fact that the moral and mental development of every human being, the passions, impulses and desires, which play so conspicuous a part in shaping his conduct, are largely dependent upon age. In early youth, whilst the faculties are in a more or less rudimentary stage and the emotions demand to be instantly appeased, the dominant form of crime is theft. Reflexion exercises such a small check upon cupidity at this period of life that an act of theft generally springs from the impulse of the moment, and is executed in such a manner that discovery is often sure to follow. The daring of young thieves is proverbial, and it must be regarded as the result of blindness to danger rather than as the effect of calculation. In France the predominance of theft among the young is attested by the fact that juveniles under twenty-one form 29 per cent. of the total number of persons tried for theft. Next to theft the offences most frequently imputed to minors are offences against decency, vagabondage, fraud and the destruction of trees, plants and crops. At the Elmira Reformatory[1] in the State of New York nearly 58 per cent. of the inmates are between sixteen and twenty years of age, 32 per cent. are between twenty and twenty-five years of age, and 10 per cent. are between twenty-five and thirty: of these offenders 93 per cent. in round numbers were convicted for offences against property, 6 per cent. for offences against the person, and 4 per cent. for offences against the peace. These statistics may be regarded as confirmatory of the figures relating to France, and both sets of statistics may be taken as showing how high the percentage of theft is among the young.

When full maturity is reached, and the bodily and mental powers of the criminal are at their maximum, the form which crime assumes undergoes a corresponding change. Cases of simple theft give place to formidable crimes of violence, such as burglary and homicide. This is another instance of the close connexion between the physical and mental attributes of the criminal as conditioned by age and the nature of his offence. As years advance this intimate union is on the whole maintained; the decay of the physical powers is accompanied by a corresponding decrease in violent crime, and offences requiring the exercise of cunning, craft, and skill form a high percentage of the crimes committed by persons who are approaching middle life. But as life advances crime materially diminishes, and offenders over fifty form a small proportion of the prison population. The

[1] See *Sixteenth Year Book* of the New York State Reformatory.

decade between thirty and forty is the most criminal period of life. Nearly 26 per cent. of the local prison population of England and Wales are between these ages, a fact which further establishes the close relation between bodily activity and the pursuit of a criminal career.

In a recently published volume, entitled *Nouvelles Recherches de Psychiatrie et d'Anthropologie Criminelle*, Prof. Lombroso, the celebrated author of *L'Uomo Delinquente*, still adheres to his theory that the criminal has as a rule a distinct physical conformation, and asserts that his opponents ignore the existence of a criminal type because they do not know how to look for it. Lombroso's typical criminal is a large and clumsy individual, with long arms, large jaws, a retreating forehead, projecting eyebrows, enormous ears, and other minor anatomical malformations. He has a defective sense of smell, but is gifted with keen sight and hearing. His features are repulsive, and he has a cold, hard, and stony look, which typifies his insensibility to pain. In his walk, gestures, conversation, and general habits he resembles the savage and the pre-human forms of the race. It is these peculiarities in combination which constitute the criminal type. At the Congress of Criminal Anthropology held in Paris in 1889 the existence of this type was ably combated by Manouvrier and Topinard, and it was contended that the anomalies visible in so large a proportion of criminals are anomalies arising from degeneracy and not from atavism. Whatever may be the ultimate fate of Lombroso's theory, he has unquestionably succeeded in calling attention to the fact that a larger proportion of anomalies is to be found among the criminal population than among ordinary members of the community. Sometimes these anomalies are inherited from diseased and degenerate parents, sometimes they are produced by a wretched childhood, and sometimes they are the result of a criminal mode of life. The amount of physical debility among the prison population may to some extent be measured by a statement contained in the report of the Medical Inspector of English Prisons for 1890. This report states that of the prisoners received at Pentonville with sentences to hard labour about one-half are unfit for such labour, and are exempted from it on medical grounds. Hard labour merely means a form of employment which any ordinary man can easily accomplish in five or six hours, and the unfitness of so large a proportion of offenders to perform it would seem to establish the defective physical capacity of criminals taken as a class.

The question now arises: How far is this defective physique

of the criminal population the result of criminal habits of life? If we take the physical condition of the inmates of the Elmira Reformatory as a test, it would appear that the practice of a criminal career is largely responsible for the enfeebled state of the prison population. According to the report of this institution for 1891, no less than 87 per cent. of the young persons admitted into it were in good health, and as this reformatory was established for beginners in crime, these statistics would seem to show that it is a life of crime which debilitates a considerable proportion of the criminal population. Many of the peculiarities in criminals which Lombroso ascribes to atavism are also explicable on the hypothesis that they arise from a career of crime; it is unquestionable that the look, walk, gestures, and slang of many criminals are produced in this way. At the same time it is not to be denied that a high percentage of the criminal classes are born with physical defects and anomalies of anatomical and physiological conformation, but whether these peculiarities are the direct or merely the indirect causes of a criminal life is a matter which affords scope for considerable differences of opinion. On some points, however, there is little room for dispute. It will be admitted on all sides that a person born with a degenerate and feeble constitution is much less likely to obtain employment and to earn a livelihood than a normally constituted man. Such a person is therefore much more likely to become a criminal, but it is economic causes in this instance which directly drive the man to crime, and not an innate perversity arising from physical defects. Again, a person may be perfectly able, so far as physique is concerned, to work at his trade or calling, but certain anomalies in his personal appearance create an impression against him, and where there is room for choice, others are preferred before him. If such a man in consequence becomes a criminal, the connexion between his bodily structure and his criminal career is only an indirect one. Even where economic causes do not come into play, the consciousness of physical peculiarities sometimes exercises a disturbing effect upon conduct. It is generally believed that Byron's lame foot had a good deal to do with his cynical and pessimistic views of life, and Shakespeare's Richard the Third, after discanting on his deformities, resolves to become a villain :—

> And therefore—since I cannot prove a lover,
> To entertain these fair well-spoken days—
> I am determined to prove a villain.

It would therefore seem that the existence of physical defects has a tendency in many cases, though by no means all, to embitter the disposition, and to prepare the way for criminal courses; yet the connexion between physical anomalies and criminal conduct is even in this instance only an indirect one.

I do not however wish it to be inferred from the preceding observations that there are not cases in which there is a direct causal connexion between the criminal's life and his physical organism: it is indubitable that there are such cases, and that a debilitated body has a tendency to produce a perverted mind. Nevertheless I should be inclined to maintain that in all instances where the organism, owing to its defective or anomalous structure, is responsible for a criminal career, that course of life is produced much less frequently by the direct effect of the organism on the character than by the manifest inadaptability of the organism to the social and economic conditions around it. In fact, the criminal life of a defectively organised human being is merely an instance of the operation of the law of natural selection. In the inevitable and unceasing struggle for existence a considerable proportion of the feeble, the degenerate, the malformed, the anomalous are not fitted for one reason or another to earn a living by normal methods, and society looks upon all who adopt abnormal methods as criminals. It therefore follows that the presence of a high percentage of physical anomalies among offenders is not a key to their mental attitude, is not a proof of the existence of a criminal type: it is rather a proof of a fact apparent everywhere, that the physically anomalous and incapable are less adapted to fight the battle of life, and are accordingly more likely to come into collision with the law. In our view therefore the physical factors of crime are in the main factors of a character which hinder the person burdened with them from honestly procuring the means of existence; these factors are very rarely by themselves the immediate and determining causes of crime.

The same remark applies with very nearly the same amount of force to mental defects. All persons mentally erratic, mentally peculiar, mentally below the average are badly adapted to fill a place in the economic constitution of society. These defects need not necessarily be of a criminal character. Excessive vanity, excessive irritability, an unsettled disposition, fitfulness of mind, instability of purpose and many other characteristics very prevalent among the criminal classes are not in themselves directly related to crime: they are merely a class of attributes which have the

effect of excluding their victims from participating in industrial life and its rewards. In a multitude of cases it is this exclusion which produces the criminal career; it is not any overwhelming tendency to wrong-doing. But while this is so, it is nevertheless important to note that want of mental adaptation to the economic order of things has the effect of rousing the criminal instincts into activity, and above all the instinct of cupidity. The form in which this instinct will manifest itself depends upon the sex, age, strength and general mental ability of the individual: it is these conditions which determine whether he will become a swindler, a burglar, a pickpocket, a coiner, and so on. Many crimes, however, have little or no connexion with the economic conditions of existence. They would still take place even if every human being had all the necessaries of life in abundance. Crimes of this nature are as a rule a product of the individual character, and arise from jealousy, hatred, irritability, vengeance, libertinage, vanity, combined with an abnormal lack of either pity or probity. In his work *La Criminologia* the Italian jurist Garofalo has rightly pointed out that the truly criminal disposition is always distinguished by an utter absence, or at least a very feeble development, of the sentiments of pity or probity. Where these two sentiments exist with a moderate amount of vitality they succeed in interposing a barrier against the blind outbursts of instinct and passion; and in cases where we find offenders possessing a fair share of pity or probity we generally discover that external circumstances, and not innate impulses, have played a paramount part in producing the offence. In the space at our command it is obviously impossible to enter into all the ramifications of criminal psychology: it must suffice to say that in this department of criminology it is most essential to differentiate between psychological attributes which directly betray a criminal disposition and psychological defects which cripple the economic or social career of the individual and drive him by a circuitous path into a life of crime.

The cosmical causes which enter into the production of crime may be briefly summarised as consisting of climate, soil, seasons, temperature, and the configuration of the earth. It has been maintained by De Greef that conduct is entirely dependent upon these cosmical factors, and, although this statement is probably too absolute, there can be no question that the various forms of civilisation are, to a very large extent, the product of cosmical conditions, and that in so far as conduct is related to civilisation, it is indirectly moulded and modified by the operations of external nature.

It is, however, held by Guerry, Lombroso, Ferri, and others that external nature has more than an indirect influence on human actions, and that the conduct of human beings is for one thing directly dominated by variations of temperature. It is pointed out, in support of this view, that the inhabitants of warm climates commit more offences against the person, whilst the inhabitants of cold climates commit more offences against property. As a general answer to this theory, it may be said that, as international criminal statistics are incapable of comparison, we are unable to subject the theory to the test of facts. In so far as this reply affects the international statistics of thefts, it must be accepted as a valid one, but it must be admitted that it does not apply with quite the same force to the statistics of homicide. No doubt, an accurate comparison of the amount of homicide committed in the various civilised communities is an impossibility, owing to disturbing circumstances which have already been referred to; but, at the same time, international statistics, with all their imperfections, make it tolerably plain that Italy and Spain, in proportion to their population, produce a larger amount of homicides than, for instance, Germany or England. Again, Australia, with a higher temperature than Great Britain, has also a higher proportion of homicides. Admitting, for a moment, the validity of international criminal statistics, we find that they do not all point in the same direction as to the effect of temperature on crime. India, for example, which is certainly much hotter than this country, has, at the same time, a much smaller proportion of murders to the population, and Colajanni, in his recent work, *La Sociologia Criminale*, mentions several other parts of the world where a high temperature is not accompanied by a high percentage of crimes of blood. It may, however, be urged, in reply to Colajanni, that the evil effects of temperature on the character are neutralised in India and elsewhere by ethnic, historic, religious, social, and economic conditions, and that where these conditions are almost the same—as, for instance, in Great Britain and Australia—the direct action of temperature is seen in the higher percentage of homicides in the warmer of the two countries.

But, however this may be, it is, at least, certain that the alternation of the seasons exercises a considerable effect on the amount and nature of criminality. The tables of Dr. Corre, in his work on *Crime et Suicide*, show that in France offences against the person are most numerous in summer, whilst offences against property are most prevalent in winter. In England we have no statistics for testing with

completeness the exact relation between season and crime, but it appears from the figures relating to indictable offences that the largest number of crimes against the person are committed in July, August, and September; whilst the largest number of offences against property are committed in October, November, and December. How are these facts to be interpreted? Are these variations in the nature of crime to be ascribed to the direct action of variations of temperature, or are they to be attributed to variations of daylight? As far as offences against property are concerned, I should be inclined to say that the short days and the long nights of winter are much more responsible for the increase of theft at that season of the year than any alterations in meteorological conditions; that, in short, it is opportunity, and not temperature, which makes the thief. This opinion is supported by the statistics of crime in Paris. According to the *Annuaire Statistique de la Ville de Paris* (1887), most of the thefts committed in the French capital are perpetrated in summer: it is in summer that the well-to-do Parisian leaves his house for the country; it is, therefore, at that season that the Parisian thief avails himself of the opportunity to ply his calling. It is very probable that if we had statistics bearing upon the annual variations of crimes against property in London, a similar state of things would be revealed.

Crimes against the person and against morals spring, as a rule, from motives which differ considerably from crimes against property, and, although the important factor of opportunity must not be omitted in estimating the causes of these offences, it is probable that temperature has a direct effect in multiplying or diminishing them. Marro[1] has pointed out that the conduct of prisoners is not so good in summer as in winter, and similar results have been arrived at with respect to the conduct of pupils at public schools. In the outer world increased opportunities for contact and conflict arising out of the presence of agreeable weathre might be held to account for the increase of offences against person and morals in the summer season, but when we find that refractory conduct also increases in institutions where opportunities for contact and conflict are the same all the year round, we are almost forced to the conclusion that a heightened temperature has some direct influence in determining the actions of men.

The social causes of crime are so numerous and complex

[1] *I Caratteri dei Delinquenti.*

that it is impossible in this place to do more than touch upon a few of the most conspicuous. It is probable that the most important of these social causes at the present time is the increasing concentration of population arising mainly out of the centralisation of industry. In all nations where the towns are increasing at the expense of the country, crime has a distinct tendency to grow rapidly. In large centres of population the physical and industrial conditions of life are in a highly defective state, and a large degenerate class springs up, most of which is unsuited for industrial occupations. Many members of this class resort to a career of crime. In large cities the criminal has also a better field, as well as more abundant opportunities of escape. According to police statistics not half as many criminals are caught in London as in the country, and as a rule the larger the town the easier it is to commit a crime in it without being detected. The close connexion between the growth of large cities and the increase of crime may be estimated by the fact that London, which contains less than one-fifth of the population of England and Wales, is yet responsible for more than one-third of the annual number of indictable crimes. London requires one policeman to every 349 of the population, the provincial towns require one policeman to every 672 of the population, the counties only require one policeman to every 1134 of the population. The percentage of police to the population is a good measure of the extent of criminal activity in the different divisions of the country, and according to this index we are justified in observing that the larger the town the more criminal it becomes. It is customary just now for official optimists and optimistic politicians to try and persuade people that crime is decreasing in this country, but it is obvious to any one who studies the facts that the preliminary conditions of a lowered percentage of crime do not exist. The recent census reveals the unpleasant fact that the rural population has only increased about 3 per cent. in the decennium, whilst the urban population has increased 15 per cent. Until these figures are reversed, or until some transformation is effected in the mechanism of town life, it will be vain to hope for a genuine decrease in the amount of crime. It may be made apparently smaller by changes in criminal procedure, shortening of sentences and other similar devices, but we may rest assured that until the fundamental causes of the evil disappear, crime will not diminish either in volume or intensity.

It was at one time very usual to assume that poverty

was the principal social cause of crime, but in recent years considerable differences of opinion have arisen upon this point. Garofalo maintains that the well-to-do in proportion to their numbers are just as criminally disposed as the poor and needy, and it must be admitted that both he and Ferri are able to produce many striking facts and arguments in support of this contention. According to Dr. Földes, the Austro-Hungarian criminal statistics show that the well-to-do perpetrate fewer thefts than the poorer classes; but, on the other hand, they are responsible for quite as many murders, and in proportion to their numbers they commit a higher percentage of offences of a serious character. Mr. Roland Falkner has shown that in America the native-born citizen, notwithstanding all his comforts and advantages, is more addicted to crime than the poor emigrant from Europe; and M. Joly assures us that in France there is no intimate relation between poverty and crime. I have pointed out elsewhere[1] that in England the prison population is highest when work is most plentiful, and lowest when work is hardest to find. The twelfth report of the Scotch Prison Commissioners also reveals the fact that the prison population was greatest when pauperism was lowest. In the face of these facts it is impossible to contend that crime is merely an economic question, and that the criminal is simply a product of wretched material conditions. What appears to be the true view in this matter is that material circumstances exercise a certain influence on the nature of crime, but have comparatively little effect in increasing or diminishing its total amount. In other words, crimes against the person are highest when material prosperity is at its height and lowest in depressed times, whilst offences against property are highest in periods of depression and lowest when trade revives. But the total volume of crime is very slightly affected by these alterations in its nature. It is vain therefore to anticipate, as many are inclined to do, that a transformation of the economic constitution of society from individualism to collectivism will result in the abolition or even in the diminution of crime. Even on the supposition that such a transformation is successful in banishing distress from the community, it will only alter the channels in which crime is now accustomed to run. A state of society in which everybody is provided with the necessaries of civilised life will be less addicted to offences against property, but more prone to

[1] *Crime and its Causes*, p. 143.

crimes against the person: theft will probably decrease (it will not disappear, inasmuch as many offences against property do not arise from economic causes), but maiming, murder, and violation will increase: the volume of crime will remain the same, but the population will run more risks of being maltreated than of being robbed. It is probable that the bulk of the community will prefer the latter alternative to the former.

It was at one time a prevalent idea that ignorance was a very important factor in the production of crime, but almost all investigators in the department of criminal statistics are hostile to this belief. In France, Guerry, Yvernes, Hausson-ville; in Italy, Lombroso, Garofalo, Ferri; in Belgium and Germany, Quetelet, Von Oettingen, Valentini, Starcke, are all more or less emphatically of opinion that instruction in reading and writing has little or no effect in elevating the character, and diminishing the annual volume of crime. The most that is admitted by the majority of competent inquirers is that education sometimes determines the form which crime will assume; the educated criminal, they maintain, seeks to attain his ends by fraud rather than violence, and Dr. Bosco is of opinion that the spread of education has had the effect of diminishing the percentage of homicides. But even these small concessions to the worth of education are the subject of much dispute. The only kind of education which possesses undoubted value from a moral point of view is the education of the character; and, as Tarde has shown, this form of education is much more the product of imitation than of precept. On the whole subject of the relations between education and conduct, Goethe goes to the root of the matter when he says "that everything is pernicious which liberalises the mind but gives us no mastery over ourselves".

It is also coming to be recognised that the effect of drink on crime has been exaggerated. It is a remarkable fact that the most drunken nations in Europe are also the very nations that are least addicted to crimes of blood, and if sobriety is to be accounted as the chief preservative against criminality, we ought to find a very low percentage of offences amongst the temperate communities in the south of Europe. As a matter of fact it is these communities which present the blackest criminal records, and although international statistics are not capable of being used for purposes of exact comparison, they at least possess the merit of making it perfectly plain that sober communities are just as criminally disposed as communities which contain a large percentage of drunkards.

The relations between nationality and crime have been exhaustively dealt with by Colajanni, who arrives at the conclusion that the varying degrees of criminality among different peoples are not to be ascribed to racial differences. Quetelet, on the other hand, considers nationality one of the most essential factors in the production of crime. The question is one which is rather difficult to decide, inasmuch as the criminal characteristics of a community may be attributed with equal plausibility either to nationality or to social and economic conditions. It is, however, certain that different nations have different temperaments, and that the highest percentage of offences against the person is committed by hot-blooded peoples. The existence of this fact would seem to show that nationality is not without some influence on the propensity to crime, but the precise extent of this influence it is of course impossible to determine. Other influences which exercise a distinct effect on criminal statistics are occupation, political institutions, militarism, and religious beliefs. We must, however, content ourselves with mentioning these factors; to discuss them would involve too great a demand on the space at our disposal.

We have now touched upon the individual, the cosmical, and the social causes of crime, and the general conclusion at which we arrive is that criminal conduct is a product of all these causes working together, but operating in each case with different degrees of intensity. Sometimes individual causes preponderate, sometimes social, sometimes cosmical, and in most instances it is difficult to say which is the determining cause. It would of course be a very excellent thing if the exact scope of the operation of these three sets of causes was capable of being accurately defined, but the complicated and impalpable nature of most of them makes this almost an impossibility. The present tendency of Italian thinkers is to lay the greatest amount of stress on individual and cosmical causes; in France the tendency is to place social causes in the front. These diversities of view are to a considerable extent resolvable into differences of terminology, and in any case it is not of paramount importance for practical purposes to be able to measure the precise value of each of the factors already mentioned so long as the influence of all of them is recognised in the production of crime.

A few words must now be said, in conclusion, as to the repression of crime. Since the days of Beccaria and Howard, the supreme object of persons interested in criminal matters has consisted in aiming at a diminution in the amount of

punishment and at an alleviation of the prisoners' condition when undergoing a sentence of imprisonment. These ideas came to the front as a revolt against the inhumanity perpetrated on offenders in bygone times, and, although good and needful in their day, it is now coming to be recognised that they are being pushed to an extreme. After all, it must be borne in mind that the supreme object of criminal legislation is not the diminution and mitigation of punishment, but the suppression of crime. It is also coming to be recognised that the theories of Howard and Beccaria have not succeeded in suppressing the criminal population, or even in preventing it from growing to an alarming extent. Such a result was not to be expected: a mere alleviation of the offenders' lot is not likely to produce a decrease in the total amount of crime. In order to effect this object, we must enter on an examination of the causes which tend to make men criminals: we must study the criminal himself: we must inquire into his physical, mental, social, and economic condition, and when a sufficient body of well-ascertained facts has been collected upon all these points, we shall then be in a position to devise scientific measures for the repression of crime, with some prospect of success. Although many more facts are needed, the number which has already been gathered together makes it absolutely certain that the present system of cellular imprisonment will never lessen the volume of crime. What is the origin of this system? It is monastic, and it is based on the monastic idea that a period of solitude and contemplation is calculated to move the heart to penitence. It is now evident that this monastic method of treatment has failed with the criminal classes. It does not make the habitual criminal reflect upon his past, inasmuch as he is generally incapable of reflecting much at all: twenty-three hours in a cell, out of every twenty-four, is apt to make the physically degenerate criminal still more degenerate, and the multitude of morbid criminals still more morbid. We have seen that cities, with their in-door life, are the hotbeds of degeneracy and crime; the cell is an aggravation of this in-door existence, and is, therefore, calculated to intensify the evil it is meant to cure. On the other hand, criminal statistics conclusively show that rural open-air life is the great preservative against crime. Healthy frames and healthy feelings are generated by contact with the soil. Just as putrid matter is purified by contact with mother earth, so are the human excrescences of civilisation disinfected by a return to those more natural conditions of existence which are to be found in the cultivation of the

ground. Abolish the cell, establish out-door occupations—this is at present the most pressing need in dealing with the repression of crime. Already the cell has been practically abolished in most of the convict prisons of Europe, with the result that grave offenders do not relapse so readily as offenders sent to cellular imprisonment. If this is the effect of an open-air life on the hardened offender, how much more satisfactory would be its effect on a novice who had just begun a life of crime!

For the discussion of further reforms in criminal legislation I must refer the reader to Prof. von Liszt's articles in the *Zeitschrift für die gesammte Strafrechtswissenschaft*, to an interesting work on the criminal by Mr. Havelock Ellis, to Prof. Ferri's important volume *La Sociologia Criminale*, and to M. Henri Joly's *Le Combat contre le Crime*.

IV.—ON THE PROPERTIES OF A ONE-DIMENSIONAL MANIFOLD.

By Benj. Ives Gilman.

The relation of anything A to anything B is called the converse of the relation of the latter to the former. Let us use the term r as a general symbol of relation, and the term cr as a general symbol of converse relation; and let us symbolise any instance of a particular relation by writing after a letter signifying something related in that way, first a sign r or cr of the relation, and then a letter signifying something to which that indicated by the first is so related. An instance of the relation r' or cr' may then be symbolised Ar' B, or Acr' B.[1]

Let us use this sign of relation in connexion with the customary symbolism of the algebra of Logic, as follows: The expression Ar B denoting any instance of the relation r', the expression A $\bar{r}'$ B will denote any other instance of the relation of anything to anything; the expression A $(r' + r'')$ B will denote any instance of the relation of anything to anything that is either r' or r''; the expression A $r'\ r''$ B will denote any instance of the relation of anything to anything that is both r' and r''. The equation of any expression to zero will mean that there exists no instance of the relation of anything to anything of the kind indicated by the expression. The equation of any expression to infinity will mean that every instance of the relation of anything to anything is of the kind indicated by the expression.

[1] The symbolism used in the text differs somewhat from those employed by De Morgan and by my former instructor Mr. C. S. Peirce in their papers on the logic of relation. De Morgan uses the expression X . . LY to signify "that X is some one of the objects of thought which stand to Y in the relation L, or is one of the Ls of Y," and X . LY to signify "that X is not any one of the Ls of Y". (*Transactions of the Cambridge Philosophical Society*, 1864, vol. x., "On the Syllogism and the Logic of Relation," p. 341.) Mr. Peirce uses expressions of the form (A : B) to denote individual dual relatives, or particular instances of dual relation, and the letter K as a symbol of converse relation. ("Description of a Notation for the Logic of Relatives," Cambridge, U.S.A., 1870. "On the Algebra of Logic," chap. iii. "The Logic of Relatives," *American Journal of Mathematics*, vol. iii. Baltimore, 1880.)

Every instance of the relation of anything to anything must be either an instance of r' or other than any instance of r'. Let us express this proposition about each of the relations r' and cr' in two equations as follows :—

$$\mathrm{A}\ (r' + \bar{r}')\,\mathrm{B} = \infty$$
$$\mathrm{A}\ (cr' + \overline{cr}')\,\mathrm{B} = \infty$$

By multiplication we have the equation :—

$$\mathrm{A}\ (r'\ cr' + r'\ cr' + \bar{r}'\ cr' + \bar{r}'\ \overline{cr}')\ \mathrm{B} = \infty$$

In words, every instance of the relation of anything to anything must belong to one or other of four mutually exclusive classes ; either it is an instance of both r' and cr', or of r' and not of cr', or of cr' and not of r', or of neither r' nor cr'.

Let us now assert in regard to the two relations r' and cr' that there exists no instance belonging to certain of the four possible classes founded upon them. Let us say

$$\text{(I.)}\ \mathrm{A}\ (r'\ cr' + \bar{r}'\ \overline{cr}')\,\mathrm{B} = 0$$

In words, nothing is both r' and cr' to anything and nothing neither r' nor cr' to anything. Subtracting this equation from the previous one, we have :—

$$\mathrm{A}\ (r'\ \overline{cr}' + \bar{r}'\ cr')\ \mathrm{B} = \infty$$

In words, from the assertion that every instance of the relation of anything to anything must belong to one or other of four classes and the assertion that none belongs to either of two of them, we infer that every one must belong to one or other of the remaining two ; that is, that the relation of anything to anything is either r' and not cr', or cr' and not r'.

The two relations r' and cr' are therefore not the same, for if $r' = cr'$ Prop. I. becomes $\mathrm{A}\ (r' + \bar{r}')\,\mathrm{B} = 0$, which is impossible. It follows that r' is not a relation of identity, that is, does not subsist between anything and itself ; for the converse of identity is itself identity.

To this proposition about relations let us add the following about the combination of relations, in which the expression A r' B r' C means any instance in which a thing is r' to something which is itself r' to something.

(II.) If Ar' Br' C
then Ar' C

In words, anything which is r' to something is r' also to anything to which the second is r'.[1]

It follows that if $Acr^1\ Bcr^1\ C$ then $Acr'\ C$. For by the definition of converse relationship, if $Ar'\ B$ then $Bcr'\ A$, and if $A\ cr'\ B$ then $Br'\ A$; whence if $A\bar{r}'\ B$ then $Bc\bar{r}'\ A$, for if $Bcr'\ A$ we have $Ar'\ B$; and likewise if $Ac\bar{r}'\ B$ then $B\bar{r}'\ A$. Therefore if $Acr'\ Bcr'\ C$ and $Ac\bar{r}'\ C$ we have $Cr'\ Br'\ A$ and $C\bar{r}\ A$, which is contrary to Prop. II.

The thesis of the present note is that these two propositions are ultimate constituents of the notion of one dimensionality.[2] The two following which we assume to be further elements in the idea are deductions from these. If of any multiplicity it is true that the relation of any element to any other is either a certain one or its converse and not both, and that in whichever relation any element stands to another it stands in the same to any third element to which the second is similarly related, the two propositions which follow are true of any finite group of elements that may be selected from it.

(1) There are two elements X and Y of the group, of which it can be affirmed that there is no element of the

[1] Mr. Peirce, following De Morgan, calls any relation of which this proposition is true a *transitive* relation.

[2] The distinctive characteristic of a singly extended manifold is formulated by Riemann in a sentence of which the following is a translation (*Gesammelte Mathematische Werke.* Leipzig, 1876. "Ueber die Hypothesen welche der Geometrie zu Grunde liegen," p. 257): "If we proceed with a notion whose determinations form a continuous manifold, from one determination in a determinate way to another, the determinations passed through form a singly extended manifold, whose essential characteristic is that from any point a continuous progress within it is possible only toward two sides, forward or backward". The definition of single extension-form given by H. Grassmann is similar (*Die Lineale Ausdehnungslehre.* Leipzig, 1878. Anhang iii. "Kurze Uebersicht uber das Wesen der Ausdehnungslehre," p. 279): "The general form of extension which corresponds to a line is the whole of the elements through which an element passes in changing its state continuously. . . . If the element changes its state always in the same way, so that when from any element a of the structure (Gebilde) through such a change another element b is produced, then by a like change from b a new element c of the same structure is produced, there arises the structure corresponding to the straight line. . . . The straight line is constructed by the change of position of a point in a constant direction: substituting for direction, manner of change, the notion here intended [of single or simple extension-form] results." The conception which it is sought to analyse in the present paper is that of one dimensionality alone, apart from the notion of continuity. According to Professor Stumpf (*Tonpsychologie.* Leipzig, 1883. I. § 8, p. 144) what is meant by saying that the domain of sensations of pitch has but one dimension is

group which is either r' to X or cr' to Y; and of no other element can it be affirmed either that there is none r' or none cr' to it.

For, comparing any two elements of the group, by the corollary to Prop. I. one will be r' to the other. Comparing this one with a third, we may take that one of the new pair which is r' to the other to compare with a fourth, and so on until all the elements of the group have been drawn into the comparison. Moreover, that member of the second pair which is r' to the other will also be r' to the remaining member of the first two pairs; for either this has emerged in the comparison, the same element having been r' to the other in both pairs, or the third element is r' to that member of the first pair which was r' to the other, and consequently by Prop. II. is also r' to that other. In like manner the element which is r' to the other in the third pair is r' also to all the other members of the three pairs; and in general at any step of the comparison the element which is r' to the other in the pair under consideration will be r' also to all the other elements thus far considered. Hence that element which is r' to the other in the pair formed with the final element of the group is r' also to all the other elements therein. Moreover, there is but one element which is r' to

"that of any three tones under all circumstances only one can be the intermediate one". In explanation of the term "intermediate" he writes: "Supposing the tones dya to be given as a simple sum of qualities, the following judgments of likeness result, da [meaning the amount of difference between d and a] $\triangleright$ ga, $da \triangleright dg$: and this we express in words . . . briefly by calling g intermediate". If this be taken as a definition of the relation "between" it is evidently implied in the meaning of the word that of any three things only one can be the intermediate one. For if anything b is between two other things a and c we have $ac \triangleright ab$, $ac \triangleright bc$: if a is between b and c we have $bc \triangleright ab$, $bc \triangleright ac$: if c is between a and b we have $ab \triangleright ac$, $ab \triangleright bc$; one inequality in each of the pairs contradicting one in each of the others. Further, to say that a manifold has one dimension is not the same thing as to say that of any three of its elements one is always intermediate. For suppose that the intermediate in each of the possible trios ABC, ABD, ACD, BCD, which can be formed from four points ABCD, is represented by the dotted letter. The points will then not lie on a straight line: or, in other words, not every manifold of which the above proposition is true is one-dimensional. It is necessary besides to make some assertion like the following, that if two elements are both intermediate to the same extremes, one is between the other and one extreme, and the other between the first and the other extreme. The two propositions taken together determine a manifold whose elements are characterised by oppositely varying amounts of difference from two extreme elements. In the discussion of the text it is sought to give a formulation of one-dimensionality in which the general notion of relation and converse relation is substituted for that of greater and less difference.

every other in the group; or in whatever order the elements be compared in the manner described the member of the final pair which is r' to the other will always be the same element. For supposing several elements $XX'...X^n$ each r' to all the others in the group; taking any two of them X and X′ we have Xr' X′ and $X'r'$ X whence by conversion Xcr' X′, that is we have $Xr'cr'$ X′ which is contradicted by Prop. I. There must therefore be one, and there cannot be more than one element X which is r' to all the others in the group, and to which therefore all the others are cr'. It follows that there is no element of the group that is r' to X, for all the others are cr' to it, and it cannot by the corollary to Prop. I. be r' to itself.

In the same way it may be shown that there is one and only one element Y which is cr' to all the others, and to which therefore no element is cr'.

(2) Among the number of elements of the group to which a given one M other than Y is cr' there is one and only one m, of which it can be affirmed that there is no element of the group which is both r' to M and cr' to m; and among the number of elements of the group to which a given one N other than X is r', there is one and only one n, of which it can be affirmed that there is no element of the group which is both cr' to N and r' to n.

For since by Prop. I. every element is either r' or cr' to every other, and since X alone is r' to all the other elements of the group, any element M other than X is cr' to one or more elements. If to only one this one will be X (since every other element is cr' to X) and X cannot be cr' to X. If to more than one element there will by the principle above established be one and only one among them to which none is cr', which is the proposition to be proved.

The corresponding proposition with regard to N and n may be proved in like manner.

Let us speak of any element of a group which is r' to another and cr' to a third as *intermediate* to the second and the third. It follows that every other element in the group is intermediate to X and Y, and that no element in the group is intermediate to M and m or to N and n. Let us further speak of the two elements X and Y to which all others are intermediate as the *extremes* of the group; and of any two elements to which none in the group is intermediate as *adjacent* or next in the group. Let us call m the r'-adjacent of M, and n the cr'-adjacent of N.

It follows that there is one and only one element in the

group adjacent to each of the extremes, to X a cr'-adjacent and to Y an r'-adjacent; and that to every other element in the group there are two and only two, one an r'-adjacent and the other a cr'-adjacent.[1]

For since X is other than Y it has by Prop. II. one and only one adjacent among those that are cr' to it; but since by Prop. I. all the other elements are cr' to it this is its only adjacent. Likewise Y has one and only one, and that an r'-adjacent. Further, by Prop. II. every element other than both X and Y has one and only one adjacent among those that are r' to it, and one and only one among those that are cr' to it; and since every other element is either r' or cr' to it by Prop. I., those two are its only adjacents.

As examples of manifolds of one dimension we may take those of time, one-dimensional space or the straight line, quantity, intensity, number and pitch. Of the relations between the different elements of each of these manifolds propositions of the form of I. and II. are true. In time the elements are called instants, in the straight line points, in quantity amounts, in intensity degrees, in number integers,

[1] Any group of elements in a manifold of one dimension constitutes therefore a *series*, according to the definition of that term given by Prof. James (*Psychology*, ii. p. 645). After laying down the principle that there are such things as kinds of relations (which is assumed in this paper), Prof. James goes on to assert that the mind can form groups of terms, characterised in the following way by one kind of relation: one of the terms A bears a relation of this kind to another B, which in its turn is so related to another C, &c., &c., until the group is exhausted; such a group being a *series*.

The reasoning of the text exhibits this proposition as a deduction from I. and II., the term A being either extreme of a one-dimensional group, B its adjacent, C the remaining adjacent of B, &c., &c., the final term of the series being the other extreme of the group. But while every one-dimensional group is a series, not every series is a one-dimensional group, for the definition just given involves the determination of the relation of each term to at most two others, while Prop. I. determines the relation of each to every other. This latter determination can be effected by combining with the definition of a series the proposition we have called II., which Prof. James terms the axiom of skipped intermediaries or of transferred relations and regards as "on the whole the broadest and deepest law of man's thought". A one-dimensional group appears then as a series of which the axiom of skipped intermediaries is true, or, to use De Morgan's term, whose characteristic relation is a *transitive* one. But the analysis of the conception of one-dimensionality into the ideas of series and transition is less simple than that given in the text; for what the latter involves besides the conception of transition is a disjunctive proposition (I.) of simple relation only, while the definition of a series consists in the assertion of a certain special form of an indefinitely continued composition of relations.

in pitch pitches. Of any two instants one is always earlier than, or the converse of earlier than, which is called later than, the other; of any two points on a given straight line one is always either in a given relation of position, called a direction, from the other, or in the converse relation, called the opposite direction, from it; of any two amounts or degrees of integers one is always either greater, or the converse of greater, which is called less, than the other; of any two pitches one is always either higher, or the converse of higher, which is called lower, than the other. Further, any instant which is earlier than a second is also earlier than any later than the second; any point in a straight line which is in a given direction from a second is in the same direction from any in the opposite direction from the second; any amount, or degree, or integer, which is greater than a second is also greater than any less than the second; and any pitch which is higher than a second is higher also than any lower than the second. Whence taking any finite group of instants one and only one will be earlier than all the others and one and only one later than all the others; there will be one adjacent to the former and later, and one adjacent to the latter and earlier; and two adjacent to any other, one preceding it and one following it; and likewise for groups of points, amounts, degrees, numbers, or pitches.

Of groups of points in two- or three-dimensional spaces like assertions are not possible. It cannot be affirmed that of any selection of points on a plane or on a solid two are extremes, nor that no point in a group has more than two adjacents; in these cases, while Prop. II. is true, Prop. I. is false. An example of a manifold which may be lacking in these attributes of one-dimensionality from opposite causes is presented by a clearing-house. While Prop. I. may be true of any clearance, *viz.*, each bank may be either in the relation debtor or its converse creditor to every other, yet it does not follow either that there is one bank which is debtor (or creditor) to all the others, or that there are any pairs of them which have no intermediate (*i.e.*, a bank which is debtor to one and creditor to the other); for Prop. II. will not necessarily be true; it cannot be argued that because a bank is debtor to a second which is debtor to a third it is also debtor to the third.

Each element in any group from one manifold of one dimension (characterised, we may say, by the relation r') may be connected with a different one in another manifold (characterised by r'') in such a way that adjacent elements in the r' group will be connected with adjacent elements in the

corresponding r'' group.[1] In any connexion of the r' group with r'' elements which fulfils this condition either every r'' element will be r'' to the same number of elements as that to which the element with which it is connected is r' or as that to which it is cr' We may speak of these alternatives as the two possible *ways* in which adjacent elements in a group from one manifold may be connected with adjacent elements in a group from another.

For connecting the r' extreme A of the group (that which is r' to all the others) with an r'' element a let its adjacent B be connected with another, b, to which the first is r''; if these are the only elements in the r' group the members of either pair will be respectively r' and r'' to the same number of elements. If the r' group have more members the other adjacent C of B cannot be connected with an r'' element c', which is r'' to b; for either it will be r'' to a, in which case a will be between the element connected with B and that connected with its adjacent C; or it will be cr'' to a, in which case it will itself be between the elements connected with B and its adjacent A. If, however, it be connected with an element c to which b is r'', and the r' group consist of but these three elements, adjacent elements therein will be connected with adjacents in the selection of r'' elements, and in each of the pairs the members will be respectively r' and r'' to the same number of others. In general, whatever the number of elements in the r' group, to effect the connexion

[1] According to G. Canter ("Une contribution à la thèorie des Ensembles," *Acta Mathematica*, iii., 1883, p. 314) it is only upon the supposition of such a correspondence, called continuous, between co-ordinates and the elements of the manifold which are determined by them that a continuum of n dimensions can be defined, as is commonly done, as one whose elements are determined by n co-ordinates. In the absence of this assumption any number of co-ordinates would suffice for the determination of the elements of a manifold of any number of dimensions.

In defining what he names a well-ordered manifold (*Ensemble Système*) Canter makes use of conceptions akin to those of the text. ("Fondements d'une théorie générale des Ensembles," *Acta Mathematica*, iii., 1883, p. 393.) "By a well-ordered manifold is to be understood any well-defined [determinate] manifold in which the elements are united to each other by a given and determinate succession, according to which there is a first element of the manifold; every element (provided it is not the last in the succession) is immediately followed by another determinate one, and to every arbitrary system of elements, finite or infinite, corresponds a determinate element which follows them immediately in the succession (provided that in the manifold there are elements which follow all the elements of the partial system under consideration)." This conception of a well-ordered manifold appears to him (p. 395) fundamental to the whole theory of manifolds. ". . . Every well-defined manifold can always be put into the form of a well-ordered manifold."

of adjacent elements therein with adjacent elements in the r'' selection, the relation r'' must be continuously applied; in which case in each pair the members will be respectively r' and r'' to the same number of elements. If the adjacent to the r' extreme A be connected with an element to which a is cr'', the process must be likewise continued by the use of this relation, and the members of any given pair will be respectively r' and cr'' to the same number of elements.

The passage from any one element in a one-dimensional group to another by transitions of adjacence involves the connexion in some way of the former element with an earlier and the latter with a later instant, and adjacent elements with adjacent instants. There is therefore but one *way* in which this is possible; that is to say, the element in the group which is in the relation of the terminus to the starting-point to n others must always be connected with that instant which is later than n of those whose identification with the elements of the group is involved in the process.

V.—DISCUSSIONS.

DR. HILLEBRAND'S SYLLOGISTIC SCHEME.

By C. L. Franklin.

Miss Jones says, in reviewing Dr. Hillebrand's pamphlet on the syllogism (Mind, N.S., vol. i. p. 281) :—

"What is really novel in this syllogistic scheme is the exclusion of any syllogism with universal premisses and particular conclusion; and the substitution for the old *Dictum de omni et nullo* of the Laws of Contradiction and Excluded Middle, and of the two rules of Immediate Inference already referred to above".

She is certainly in the right in implying that nothing else is novel in this scheme, but she is wrong in saying that there is anything novel in either of the two points mentioned. As regards the first one, every logician who has considered that the proposition "some a's are b's (and there are a's)" can only be logically denied by "no a's are b's (or else there are not any a's)," has always seen at once that universal premisses (which make no affirmations concerning existence of terms) can never give ground for particular conclusions (which do make such affirmations), except with the aid of a separate statement that the terms in question do exist.[1]

Mr. McColl, to whom, in the first instance, this improvement in the doctrine of the proposition is due, explicitly points out this first consequence of it (Mind, No. 17), and all his followers have done the same. I have already said in Mind that I think it unfortunate that Mr. McColl's valuable work in Logic should have met with almost complete neglect in England, and I must

[1] Nothing, of course, is now illogical that was ever logical before. It is merely a question of what *convention* in regard to the existence of terms we adopt before we admit the warm-blooded sentences of real life into the iron moulds of logical manipulation. With the old convention (which was never explicitly stated), subalternation ran thus :—

"No x's are y's (and we hereby mean to imply that there are x's, whatever x may be),
$\therefore$ Some x's are non-y's".

With the new convention, the requirement is simply that if it is known that there are x's (as it is known, of course, in by far the greater number of the sentences that it interests us to form) that fact must be expressly stated. The argument then is :—

"No x's are y's,
There are x's,
$\therefore$ There are x's which are non-y's".

now protest against a self-evident remark of his being set down as novel when it is brought forth as such by a German who has read no English logician later than Jevons.

The reduction of the syllogism to a particular case of the principles of "Under-statement"[1] and of the Laws of Thought, I am obliged to claim for myself. I get the syllogism as a particular case of a more general argument, instead of deducing it from a more special argument, as Dr. Hillebrand does.

The more general argument is this :—

$$\left.\begin{array}{l}\text{No A is B}\\ \text{No C is D}\\ \text{No AC is either B or D}\end{array}\right\} = \left\{\begin{array}{l}A\bar{\vee}B\\ C\bar{\vee}D\\ AC\bar{\vee}B + D\end{array}\right.$$

No bankers have souls.
No poets have bodies.
No bankers who are poets have either souls or bodies.

This argument upon analysis is found to consist of (1) saying in one sentence what has been said in two, and (2) dropping part of what has been said. It becomes a syllogism in the particular case when B and D are contradictory terms :—

$$\left.\begin{array}{l}\text{No A is B}\\ \text{No C is } \bar{B}\\ \text{A which is C (since}\\ \text{it is neither B nor}\\ \text{non-B) is not any-}\\ \text{thing.}\end{array}\right\} = \left\{\begin{array}{l}A\bar{\vee}B\\ C\bar{\vee}B\\ \hline\\ AC\bar{\vee}B + \bar{B}\\ \text{or, } AC\bar{\vee}\,1\end{array}\right.$$

No bankers have souls.
No poets are without souls.
∴ There are no bankers who are poets.

And the universal particular syllogism can be treated in a similar way.

But instead of stopping with this simplification of the syllogism, I go farther, and reduce these two forms to *one single typical form*, the standard form for every possible syllogism, which is, indeed, no longer exactly a syllogism in the strict meaning of the term, but which is an INCONSISTENCY equivalent to the syllogism. Either of the above syllogisms is correctly stated by saying that "if the premisses are true it is impossible that the conclusion should be false, or it is impossible that the contradictory of the conclusion should be true"; or thus: "it is impossible that the

[1] Under this name I include all cases of the legitimate adding or dropping of terms; as, for instance, when we infer from "all men are mortal" that "all strong men are mortal," and that "all men are either mortal or else become translated"; or from "both nuts and raisins are edible fruits" that "nuts are fruits," or that "raisins are edible".

premisses and the contradictory of the conclusion should be all of them at once true"; or, "certain three propositions are mutually inconsistent" But no sooner has this been done for *both* the above syllogisms than it appears (since the order in which propositions are stated is immaterial) they reduce to *one and the same form of Inconsistency*. This Inconsistency is (if we write a subscript o for "*no is*," and a subscript u for "*some is*")

$$(1)\ (xy)_o\ (z\bar{y})_o\ (xz)_u = 0\ ;\ \text{that is :—}$$

"No x is y, no z is non-y, and some x is z are mutually inconsistent propositions"

This one Inconsistency is the same argument as either of these two syllogisms :—

(2) No x is y and on z is non-y imply that no x is z.	No x is y and some x is z imply that some z is non-y.

This Inconsistency, far from being an unnatural form of argument, is *the one most natural form* when the argument is carried on as a conversation or a discussion (subject, of course, to the modification that we prefer to avoid the use of too many negative sentences).[1] So natural is it, indeed, that we have an abbreviated form of speech for it, by which we are able to give the whole force of the phrase "are mutually inconsistent propositions" by means of the simple word *but*. Thus :—

"No students are voters".
"But some students are citizens, and all citizens are voters [or, no citizens are not voters]."

The implication here is that the first speaker must be prepared to upset one of these two last propositions, or else to admit that his own statement is false,—that the three propositions, in other words, are together incompatible; and all this is expressed by the single word *but*, together with the proper intonation,—a form of speech as concise as the *therefore* of the syllogism.

That the Inconsistency, as a form of argument, is not of late psycho-genetic development, I have proof in the fact that I have heard it used by a child of four, and in this way :—

"Nobody eats soup with a fork, Helen".
"But I do, and I am somebody!"

The advantage of adopting the Inconsistency as the typical form of argument, to which every other is to be reduced in order

[1] Many worse theses have been maintained than that argument had its origin in this way. Our savage ancestors made statements, no doubt, without supporting them by reasons; and it was an opponent who refused to accept a simple statement as true, who first brought up considerations in rebuttal, and pointed out that they were inconsistent with the proposed affirmation.

to test its validity in the most expeditious manner possible, is that the *rules* which it requires one to remember are of extreme brevity and simplicity. They are these :—

I. Express every universal proposition negatively, and every particular proposition affirmatively.

II. Take the contradictory of the conclusion (if the original argument was a syllogism).

III. The argument must now consist of two universal propositions, and one particular proposition; and the necessary and sufficient condition for validity (as appears from (1)) is that a term common to two universal propositions must have unlike signs, and a term common to a universal and particular proposition must have like signs.

This is all. There are no separate rules for the cases of the syllogism being particular or universal; nor for the cases of terms being in the subject or the predicate,—subject and predicate play exactly similar *rôles* when all sentences begin with "no" or "some".

Dr. Hillebrand's reduction of the syllogism to the two forms (2) is not new, and it has nothing like the importance that he claims for it. Either of these forms is *a* syllogism, but it has absolutely no greater claim to be considered *the* syllogism of its class than any other of the valid forms. It may be the best, the simplest, the easiest to feel the force of, and it certainly is the easiest to test the validity of,—a matter, of course, of crucial importance from the practical point of view. But to suppose that it is capable of throwing any light whatever upon either the philosophy or the psychology of a syllogism which is stated in any other of the commonly recognised forms, is nonsense.

VI.—CRITICAL NOTICES.

Text-book of Psychology. By William James, Professor of Psychology in Harvard University. London: Macmillan & Co., 1890. Pp. xiv., 478.

We have here an abridgment of the author's *Principles of Psychology*, from which he believes that he has omitted "all the polemical and historical matter, all the metaphysical discussion and purely speculative passages," as well as "all the impertinences, of the larger work". This text-book the writer intended for class-room use, but it is a question whether it will not be of more service to the advanced psychologist anxious to have an authentic summary of the positive doctrines of a new master in the science, but deterred, and perhaps distracted, by the extreme discursiveness of the original volumes.

Taken as a whole, it does not seem very well adapted to serve the ordinary student as his *text-book*, though it will be invaluable to one who has made sure of his ground-work elsewhere. Prof. James's expositions of many special topics are admirable. For freshness and lucidity of statement, charm of style and felicity of illustration, it would be easy to find here a dozen long passages that might be cited alongside of classic pieces from the pages of Berkeley and Hume. In the way of descriptive or concrete analysis, nothing has ever been done surpassing, for example, the chapters on the "Stream of Consciousness" and on the Will. The author's successes in this direction are not due merely to great literary gifts: he has a still rarer qualification. In a department of knowledge, where it is so easy to read what has been written, and so hard to observe anew fairly and thoroughly, Prof. James is a seer, single-eyed, and full of light. Unfettered by tradition, and no system-monger, his one aim is from a definite standpoint to tell us what he sees, and to see all he can. Of necessity, almost, in such a case, along with vivid and definite *aperçus* we have gaps and some failure as regards systematic connexion; all which is openly acknowledged by the witness himself so far as he is aware of it. His eagerness to see and to find utterance for what he sees seems to have led to a certain impatience of the trammels of technical nomenclature and terminology. Thus most students, I fear, would find it very difficult to gather from this text-book the precise connotation of terms like Attention, Thought, Feeling, Intellect, Object, Identity, Interest; or to determine the relations of Conception, Imagination, and Perception, as these are defined. Again, though the book purports to be a conspectus of the principles of psychology, the student will have some trouble in ascertaining what these principles are, and may be comforted on reaching the last page to

learn that after all there are no principles, that psychology, in the author's opinion, is but "a string of raw facts; a little classification and generalisation on the mere descriptive level; a strong prejudice that we *have* states of mind, and that our brains condition them: but not a single law in the sense in which physics shows us laws, not a single proposition from which any consequence can causally be deduced".

From the preface one may gather that the order of exposition followed has been condemned by previous critics as unsystematic. And I fear the charge is just; although fully agreeing with the author "that we really gain a more living understanding of the mind by keeping our attention as long as possible upon our entire conscious states as they are concretely given to us, than by the *post mortem* study of their comminuted 'elements'". But on the one hand he seems to have maintained this analytic attitude far too long, and on the other he has not at the outset been sufficiently thorough with it. Nine-tenths of the psychological treatises in vogue—and they are a bewildering multitude—after a most jejune and beggarly pretence at the analysis of mind in the concrete, as the reader knows it, plunge at once into what they are pleased to call their scientific exposition. The notorious result is that the whole subject is turned topsy-turvy; an utterly false conception is given of the nature of sensations and ideas; and the essential unity and continuity of conscious life is regarded as something mysteriously superinduced upon its elements. But is it not passing strange that a teacher, saved by his own scientific independence and uprightness from this blunder, should yet have "obeyed custom" so far as, after a brief introduction of barely seven pages, to occupy the first six chapters exclusively with sensations, "although by no means persuaded that such order intrinsically is the best"! In two other points still the author does not seem to have been true to his method. If we are to start from our entire conscious states as they are concretely given to us, we ought not to have to wait till the last quarter of the book (ch. xxiii.) for an exposition of the active side of consciousness:[1] nor ought we to be pestered at every turn with physiological "impertinences" which assuredly are no part of our "conscious states as they are concretely given to us". However, this raises other issues that we must for the present defer. If we are to take the author strictly at his word, the book ought to begin with ch. xi., entitled "The Stream of Consciousness". In this and the ten following chapters (xii.-xxi.) he sticks to his method, apologising in the preface because the chapter on "Reasoning" (xxii.) is out of place: it ought to have followed that on the "Self" (ch. xii.). Were this change made, the entire department of cognition would be disposed of analytically. But here the author seems to me to ride

[1] The fact is, however, emphatically noted in a brief paragraph on p. 5.

his hobby to death. To treat of reasoning before association, of imagination before perception, is to ignore the capital fact that mind develops and develops according to a certain necessary sequence. To do this, and then to say that psychology has not a "single proposition from which any consequence can causally be deduced," is a trifle perverse. By just so much as development is a light-bringing conception in the whole treatment of life, by so much is a synthetic exposition helpful in psychology. In fact, Prof. James's argument recoils upon himself: so far as life and growth are one, *his* is "the *post mortem* study," and the genetic method it is that sets the living mind before us. In avoiding one extreme he has fallen into the opposite, and most of what incoherence and incompleteness there is in his work might be set down as the consequence. A general analysis sufficient to ascertain the broad features, and to secure the more fundamental generalisations, followed by an exposition in synthetic order, in which the more detailed analyses might have been interpolated, would have been not only more logical, but preferable also in respect of what the author calls "pedagogic order"—a truism, indeed, that all pedagogists, with one consent, affirm. The facts denoted by such terms as Retentiveness, Assimilation, Habit, and their bearing on Memory, Association, and Perception, for example, would have been clearer on this plan, and the important topic of Language and Thought would not have been disposed of by two or three casual references at long intervals.

The most imposing omission is that of the department of Feeling or *Gemüth*, imposing not only for its extent but still more because it is deliberate. As regards 'scientific psychologies' of the emotions he urges with great vigour that their "pretences to accuracy [are] a sham. . . . They give one nowhere a central point of view, or a deductive generative principle; they distinguish and refine and specify *in infinitum* without ever getting on to another logical level" (p. 375). This is perhaps in the main true. But the author's own "theory" does very much less, I fear, to ensure deeper insight and greater simplification than he himself supposes. What he calls "the vital point of the whole theory" consists in exposing the inaccuracy of the phrase "bodily expression of an emotion"; a phrase which is liable to mislead us into fancying that emotion may be antecedent to, or independent of, expression, as thought, for example, may be. My fear or anger may chance to be *ex*pressive to another, but they are, of necessity, *im*pressive to me: "a disembodied human emotion is a sheer nonentity". In so far as I have a certain emotion, in so far I have "the feelings of its bodily symptoms". This is true, not to say trite; but how do these symptoms arise? The theory at this point becomes perplexing and perplexed. From certain of its statements we gather an answer in this wise: "A purely bodily cause produces the feeling of a bodily state, and the emotion is nothing but this: in so far as the bodily cause is set up, be the means what they may,

in so far the emotion is present. Moral: Go through the *outward movements* of the dispositions you prefer to cultivate and the reward of persistency will infallibly come" (p. 383). Are you unbelieving? Go to a lunatic asylum. "The best proof that the immediate cause of emotion is a physical effect on the nerves is furnished by *those pathological cases in which the emotion is objectless*" (p. 377). But we also get an answer of a different tenor: "An emotion is a tendency to feel characteristically when in presence of a certain object in the environment. . . . Every object that excites an instinct excites an emotion as well. The only distinction one may draw is that the reaction called emotional terminates in the subject's own body, whilst the reaction called instinctive is apt to go farther and enter into practical relations with the exciting object" (p. 373). Instead of keeping to superficial inquiries as to the proper genera of emotion and the expression by which each is characterised "the questions now are *causal:* 'Just what changes does this object and what changes does that object excite?' and: 'How come they to excite these particular changes and not others?' . . . The moment an emotion is causally accounted for, as the arousal by an object of a lot of reflex acts which are forthwith felt, we immediately see why there is no limit to the number of possible different emotions which may exist" (p. 381). Now though there is presumably no question that the latter is the more complete account, the author confuses both himself and his readers by an undue insistence upon the former. If the reflex reaction is due to the excitement of an object, then an objectless emotion is nonsense; and if it is true to say the object may be present without the emotion, *viz.*, when it arouses no reflex acts, it is equally true to say the bodily changes may be felt without emotion, *viz.*, when they are movements, but not reflexes, aroused by an object. No doubt the physical effect on the nerves is not *precisely* the same when the movement is not an emotional reaction, neither is the object for the percipient precisely the same when it excites no emotion. Instead of so exhibiting the facts he refers to, when on the former tack, as to lead his readers and himself to take the part for the whole, the author would have done better to institute the careful scrutiny his own definition demands and ascertain whether the lunatic's emotions are really "objectless" and not merely groundless. He might have considered too whether whistling to keep up courage and speaking in a major key to subdue melancholy, when effective, are not so partly because they are antithetic to the emotional reaction of fear and gloom; and still more, because, owing to their association with objects of an opposite class, they help to extrude fearful and dismal thoughts. He seems, in fact, to have forgotten his own rule about attending "to entire conscious states as much as possible". As to the simplification promised, what does it amount to? Briefly this: As reflexes vary indefinitely and the number of objects that call them forth are

innumerable, there is no limit to the number of different emotions which may exist: they may be distinguished as *coarser* or *subtler* according to the relative strength of their bodily reverberations, but further than this it does not seem worth while to go. As well almost might a zoologist know no distinction save that of big or little, animal or animalcule. Surely the over-refinement of the Herbartians is better than this! Even if the exciting objects are innumerable they at least fall into the two classes of pleasurable and painful. And as to the "reflexes"—spite of their variety—is there no light in the Kantian distinction of sthenic and asthenic or in that of appetitive and aversive? Without some better insight into their characteristics than that afforded by their relative strength, the inquiry the author proposes: "How comes this object to excite this lot of reflex acts, that object to excite another lot?" will never get very deep, however "causal" they may be.

But Prof. James deliberately rejects the world-old belief that feeling (*i.e.*, pleasure or pain) is the spring of action. It is, he tells the student, "a great mistake," due to "a premature philosophy," and "a curiously narrow teleological superstition". He continues thus: "Important as is the influence of pleasures and pains upon our movements, they are far from being our only stimuli. With the manifestations of instinct and emotional expression, for example, they have absolutely nothing to do. Who smiles for the pleasure of the smiling, or frowns for the pleasure of the frown? . . . In all these cases the movements are discharged fatally by the *vis a tergo* which the stimulus exerts upon a nervous system framed to respond in just that way. . . . The *impulsive quality* of mental states is an attribute behind which we cannot go. Some states of mind have more of it than others, some have it in this direction, and some in that. Feelings of pleasure and pain have it, and perceptions and imaginations of fact have it, but neither have it exclusively or peculiarly. It is of the essence of all consciousness (or of the neural process which underlies it) to instigate movements of some sort. If the thought of pleasure can impel to action, surely other thoughts may" (pp. 445 f.). Now many hoary superstitions have been worsted before now, and the man who did them battle generally began with the world against him. Prof. James may be right: there is, perhaps, no question that runs us further into the dim recesses of metaphysics than this concerning the connexion of feeling and movement, and we must not be dogmatic. But, at least, we may expect this psychological Athanasius to take some pains to understand our superstition, and also to give careful heed to his own terms and standpoint: yet it would be hard to find a controversial passage with a more cavalierly air of *sans souci* about it than this. To begin with: he calmly and candidly regrets in his preface "to have been unable to supply a chapter on pleasure and pain," and the reader seems left to guess in what sense these very ambiguous

terms are used. Again, between movement and action there is a wide difference: the mechanism of movement may be framed and adjusted to any extent without detriment to the statement that action is due to feeling. And the question is not whether normally a man smiles for the pleasure of smiling, or frowns for the pleasure of the frown, but whether he smiles except when pleased, or frowns except when displeased. It is nothing to the point to say that the movements of the great zygomatic muscles in the one case, or of the corrugators in the other, are predetermined in the nervous system: the question is whether the diffused discharge is ever unaccompanied with feeling. No doubt, we do many things in "the daily routine of life, our dressing and undressing," and the like, "without reference to pleasure or pain"; but just as far as these secondarily automatic performances are independent of feeling, so far are they independent of consciousness, and leave us free to act and feel in other directions. The habits of to-day were the acts of yesterday, and it is just their fixity that makes higher life possible. To draw a fundamental distinction between the two is "no illusory simplification," as Prof. James hints: rather to confound them is to miss the meaning of mental development altogether. It may well be that "the impulsive quality of mental states is an attribute behind which we cannot go". But what does impulse mean? Upon this word the whole issue turns, and yet no attempt is made to define it. If the student look elsewhere for a definition, he will come upon bewildering variety enough:[1] still, I believe he will find that, as a psychological term, impulse has invariably included feeling as part of its connotation. Back of it, in this sense, we certainly cannot go. Still more hopeless, if possible, will be the student's attempt to attach any precise meaning to the statement that "it is of the essence of all consciousness to *instigate* movement of some sort," especially when he takes the parenthetic reference to neural processes into account. The author's carelessness becomes almost fatuous when he proceeds to clinch his argument with the remark that, "if the thought of pleasure can impel to action, surely other thoughts may". But when does the thought of pleasure impel to action except when it first occasions feeling? Are we expected to identify feeling and thought of feeling, as well as to use thought and feeling interchangeably?

The licence the author allows himself in the use of fundamental terms involves him sometimes in what might be fairly called logical barbarisms. Take the following: "Sensations are cognitive. . . . The sensations of the eye are aware of the colours of things; those of the ear are acquainted with their sounds" (p.

[1] Perhaps I might be allowed to refer any reader interested in this point to one of Volkmann's excellent notes, *Lehrbuch der Psychologie*, Bd. ii. § 146, Anmkg. 1.

13). And, again: "'The thoughts themselves are the thinkers" which, we are told, must be "the final word" of psychology as a science concerning the knowing self or subject (p. 216). If I were to say to a child: It is the spoon that eats the porridge, and the fork that eats the meat, he would be puzzled; and still more puzzled if I were to add: But, of course, it's you that eat the breakfast. If any one were to say: The poems themselves are the poet, or the laws themselves are the legislators, we should confidently declare such statements nonsensical. In what respect is this "final word: the thoughts themselves are the thinkers" formally different? And yet I am bound to say that the chapter on the "Self," in which both these logical solecisms recur again and again, is the most successful attempt I have seen to resolve the knower into the known. It reminds one of the feats of mathematicians with their absurd $\sqrt{(-1)}$: what if the way to deeper truth in psychology be through absurdity? "The *full* truth about states of mind cannot be known," says Prof. James, "until both Theory of Knowledge and Rational Psychology have said their say." Granted: but have they said nothing so far, and where does their jurisdiction begin? Is empirical psychology to end in incongruities and contradictions which philosophy is hereafter to set right? For my own part, I believe there is more uniformity in the advance of knowledge than Prof. James's view implies. There exists already a fair amount of philosophical prolegomena to psychology, and it is really disheartening to find a writer with such keen philosophic interest sweeping it all aside to found instead on the shifting sands of physiological psychology. No science can afford to be slovenly about its fundamental conceptions, and, though the difficulty of precisely defining standpoint and data is probably greater in psychology than in any other science whatever, yet the importance of exactness is nowhere so vital. Prof. James is perfectly open about the line he takes, and, so far, deserves all praise. At the very outset he says: "Psychology at present is on the materialistic tack, and ought, in the interests of ultimate success, to be allowed full headway even by those who are certain she will never fetch the port without putting down the helm once more" (p. 7). But what reason is there to suppose that conceptions, into which, from the nature of the case, physical ideas cannot enter, will be clearer then than now? It is fearfully hard to define what we mean by Subject, Object, Presentation, Feeling, Judgment, Belief, Memory, Volition; but till these and cognate conceptions are clear and distinct, psychology must be at a standstill, let psychophysics advance as much as it may. The true position of affairs, indeed, at the present time seems rather to be that psychology proper is stranded altogether, while psychophysics carries her flag. And yet it is hardly true to say this either, when one thinks of the work of men like Brentano, Meinong, Höffding, and some others. But in his haste to be *en*

rapport with neurology, Prof. James will not waste a minute on fixing conceptions. On his second page he gives the following account of the data of psychology—certainly the loosest possible: "These data are: 1. *Thoughts and feelings,* or whatever other names transitory *states of consciousness* may be known by. 2. *Knowledge,* by these states of consciousness, of other things." He then (p. 7) proceeds to divide psychology in correspondence with the three main divisions of the nervous system: "(1) the fibres which carry currents in; (2) the organs of central redirection of them; and (3) the fibres which carry them out"! Happily this does not hinder him from achieving the distinction that, I think, he deserves of being second to none in psychological observation and analysis, but it has prevented him, I fear, from becoming an effective expositor of the principles of psychology.

On one point, however, our author is not with the crowd: he avows himself a believer in 'mediumships' or 'possessions,' maintains that the work of the Society for Psychical Research meets "one of the greatest needs of psychology," and hopes that his "personal confession may possibly draw a reader or two into a field which the *soi-disant* 'scientist' usually refuses to explore" (p. 214). Let us not sneer at this frank avowal, nor grudge the new inquirers it may incite. Meanwhile, it must strike the impartial spectator as a little humorous that, on the one hand, these people have arrogated to themselves a title under which every psychological inquirer *might* be enrolled, and on the other, stigmatise as *soi-disant* 'scientists'—a name ugly enough for anything—the great body of psychologists, who, in fact, think proper not to join their ranks. Since we have dropped to trifles, it may be worth-while to animadvert on a certain unacademic and scarcely decorous vein of language and illustration that crops up here and there: as when, *e.g.*, introspective psychology is advised "to throw up the sponge"; or the reader is casually reminded that "this very morning he has brushed, used, and picked his teeth"; or when, to illustrate the explosive will, an Italian *bravoccio* is described as not only singing the songs, and making the speeches, &c., but as carrying out the practical jokes, kissing the girls, and fighting the men; or when, as an instance of the code of honour of fashionable society, and *apropos* of the social Me, we read: "You must not lie in general, but you may lie as much as you please if asked about your relations with a lady". But the oddest of all, and this, I am sure, is purely American, is the picture in the chapter on "Habit" of the man of shoddy, who, "no matter how much money there be in his pocket," can't "even learn to *dress* like a gentleman-born. The merchants offer their wares as eagerly to him as to the veriest 'swell,' but he simply cannot buy the right things. An invisible law, as strong as gravitation, keeps him within his orbit, arrayed this year as he was the last; and how his better-clad acquaintances contrive to get the things they wear will be for him a mystery

till his dying day." How dreadful! But why so much detail? A severe critic, I am afraid, would say that Mr. James's facile pencil often runs away with him. Even when, as for the most part is the case, there is nothing to find fault with on the score of taste, there is not infrequently a needless but picturesque elaboration of stage scenery.

JAMES WARD.

Early Greek Philosophy. By JOHN BURNET, M.A., Fellow of Merton College, Oxford. London and Edinburgh: Adam and Charles Black, 1892. Pp. 376.

Since the publication of Diels's *Doxographi Græci* in 1879 so much advance has been made in the study of Early Greek Philosophy that it would have been a real service to English students merely to record the results of German scholarship in this department. But the present book is far from being only a record of the labours of others. It is original and judicious, as well as learned and scholarly, and constitutes a solid contribution of permanent value to the history of Philosophy.

After an introduction of thirty pages, dealing with the general character of early Greek speculation, and maintaining (with Zeller) the essential originality of Greek philosophy properly so called, the author proceeds to review the different schools of pre-sophistic philosophy, devoting to each philosopher a separate discussion, which embraces in each case a literal translation of the extant fragments.

Perhaps the most noticeable point in the Introduction is the explanation of the title περὶ φύσεως so often given to early philosophical writings. Mr. Burnet warns us against taking it as equivalent to *De rerum natura* (as it was understood by later writers): it means (according to him) "concerning the primary substance". This explanation suits well with the character of these early writings, and the word φύσις is certainly used in this sense by Plato and Aristotle in speaking of the ἀρχή sought by early philosophers: but it would have been well if the author had established his point by a fuller discussion of the word φύσις. One of the earliest meanings of this word is certainly 'birth,' and while it does not seem improbable that περὶ φύσεως may have originally meant simply 'on birth,' and been used as a title for works dealing (in large measure) with the birth of the world, it is perhaps more likely that the primary element was really called by them φύσις as the thing which (by its combinations, &c.) gives birth to all else. Such a use of the word, though rare, is not unexampled.

In dealing with the theories of the individual philosophers, Mr. Burnet's tendency is to lay stress chiefly upon the doctrines contained in the extant fragments. Next to the evidence of the

fragments, he places that of Plato, where it is available. "Aristotle's statements," he says, "about early philosophers are far less historical than Plato's. Not that he failed to understand the facts, but he nearly always discusses them from the point of view of his own system." To the evidence of Theophrastus, as preserved by the Doxographers, he generally assigns a high value: and in point of fact—as Plato seldom helps us—Mr. Burnet's views on the doctrines of early Greek philosophers are almost entirely derived from a combination of their fragments with the doxographical material indirectly derived from the "Opinions of Theophrastus".

This mode or procedure is fair and legitimate, so long as it is recognised that the results obtained by it are partial and incomplete. In the first place, we have but the merest fragments preserved to us of the writings of pre-sophistic philosophy in Greece, and these are very imperfectly supplemented by the Doxographers: our statement, therefore, of the doctrines, *e.g.*, of Heraclitus and Parmenides, will be very far from exhaustive, if we reject or ignore extraneous evidence, even when it comes from writers who have a system of their own to uphold. In the second place, no writer on ancient philosophy—least of all Mr. Burnet—can be content with a bare statement of doctrines. It is impossible not to theorise as to the interdependence and development not only of these doctrines, but also of the different philosophers, and even of the different schools. Whether our theories, based as they are on partial data, are likely to be historically more correct than those of Aristotle and the Stoics, who may be supposed to have had before them, in most cases, the complete works of the early philosophers, may perhaps be doubted, even after we have made every allowance for the tendency of ancient philosophers to find their own views in their predecessors. It is at least certain that in theorising ourselves we cannot afford to ignore the theories of men who may have had less judgment and impartiality, but certainly had more knowledge than ourselves.

The first chapter of Mr. Burnet's work deals with the Milesian school, the most important representative of which was Anaximander. After discussing and partially rejecting each of the four conflicting views as to the nature of Anaximander's ἄπειρον, Mr. Burnet finally decides for the view that ἄπειρον denotes body, spatially infinite, out of which "our world once emerged by the 'separating out' of the opposites, moist and dry, warm and cold". The view that ἄπειρον means "qualitatively indeterminate" is (we think) successfully refuted by the argument that Anaximenes, the successor of Anaximander, retained the φύσις ἄπειρος, but identified it with the (qualitatively determinate) "Air" or "Mist". But we fail to see why Mr. Burnet should (as we think) weaken his argument on p. 53 by having recourse to Lütze's correction in order to escape having to admit that

Aristotle spoke of the ἄπειρον of Anaximander as a "mixture". As it is by the process of separating out certain opposites from the ἄπειρον that the world (according to Anaximander) is called into being, Aristotle might fairly have represented the ἄπειρον as a "mixture" of these opposites, which (as he would have said) are present δυνάμει therein. In point of fact (as Mr. Burnet recognises on p. 73), when the world is absorbed again in the Boundless, the fire which has burned up the whole of the cold element is "simply the 'mixture,' if we choose to call it so, of the hot and cold; that is, it will be the same as the Boundless which surrounds it".

On the "innumerable worlds" ascribed to Anaximander, Mr. Burnet argues with much force for the view that they are at once coexistent and perishable.

Mr. Burnet's exposition of Heraclitus' philosophy forms, perhaps, the most interesting and original chapter in the whole of his book, but it is not likely to command assent with those who have much regard for the testimony of the Stoics, or, for that matter, even of Aristotle.

The foundation of the author's explanation of Heraclitus' theory is the well-known passage in Plato's *Sophistes* (242 D); where Plato contrasts the Ionian and Sicilian Muses in respect of their treatment of the One and the Many. "For," says Plato, "according to the severer Muses, the one 'in its division is always being brought together,' but the softer Muses said that the All was alternately one and at peace through Aphrodite, and many and at war because of what they called strife." In agreement with this passage Mr. Burnet regards the discovery of Heraclitus as the fact that "opposites are one, that they are but the two faces of the fire which is the thought of the world". Heraclitus' primary substance was real fire, and why he fixed upon it is thus explained: In combustion "the quantity of fire in a flame burning steadily appears to remain the same, the flame seems to be what we call a 'thing'. And yet the substance of it is continually changing. It is always passing away in smoke, and its place is always being taken by fresh matter from the fuel that feeds it. This is just what we want. If we regard the world as an 'ever-living fire' (fr. 20), we can understand how it is always becoming all things, while all things are always returning to it." The "way up and down" is thus expounded: "At any given moment, half of the sea is taking the downward path, and has just been fiery stormcloud"—thus is πρηστήρ for the first time ingeniously explained—"while half of it is going up, and has just been earth. In proportion as the sea is increased by rain, water passes into earth; in proportion as the sea is diminished by evaporation, it is fed by the earth. Lastly, the ignition of the bright vapour from the sea in the bowl of the sun completes the circle of the 'upward and downward path'. Its beginning and its end are the same, namely, fire." What is chiefly

noteworthy in this interpretation of Heraclitus is the strenuous way in which Mr. Burnet develops it to its logical conclusion. He allows "periodical encroachments of water upon fire, and of fire upon water, which produce the alternation of night and day, summer and winter," but as the exchange is to be just, in the long run "fire will take as much, and no more, than it gives". The interchange is always going on, and consequently the theory of a final conflagration could not have been held by Heraclitus. Mr. Burnet even maintains that "the theory of a general conflagration is denied by Heraclitus in so many words". We cannot see that this is so, nor convince ourselves that Fragment 20 may not refer to the absorption of the (present) world in fire; as for Fragment 29, it may have reference to the daily path of the sun from East to West, and be connected with Fragment 30, concerning the limits of East and West. The extreme uncertainty as to the precise reference of these fragments makes it hazardous to build much on them, and we think Mr. Burnet is more persuasive when he rests his case on the testimony of Plato and on the irreconcilability of the usual view with the first principles of Heraclitus. We do not, however, feel certain that he successfully rebuts the testimony of Aristotle in the *De Cælo* (quoted on p. 165), and the systematic attribution to Heraclitus of the doctrine of ἐκπύρωσις by Stoic writers is hardly sufficiently explained by the tendency of post-Aristotelian writers to father their doctrines on their predecessors. In spite of this, we think that Mr. Burnet has made out a strong case in favour of his view, a corollary of which is that the Great Year is no longer to be regarded as the period between two universal conflagrations, but "as the time taken by the encroachment of fire and its subsequent retreat, the re-enactment on a larger scale of the alternation of day and night, summer and winter".

It should be noted that Mr. Burnet emphatically rejects the Stoic view of Heraclitus' λόγος as "reason," translating it simply as 'argument' or 'discourse'. We hope that in a second edition he will justify this interpretation at greater length, especially as it requires the far from probable substitution in Fragment 92 of τοῦ φρονέειν for τοῦ λόγου. It does not follow that because λόγος means 'reason' in Stoicism, it means something *quite* different in Heraclitus: the presumption is rather the other way, if we bear in mind the general influence of Heraclitus' teaching upon the later school.

Mr. Burnet's account of Parmenides is exceedingly clear and definite. "What *is*, is a finite, spherical, motionless corporeal plenum, and there is nothing beyond it. . . . What appears later as the elements of Empedokles, the so-called homœomeries of Anaxagoras and the atoms of Leukippos and Demokritos, is just the Parmenidean 'Being'. Parmenides is not, as some have said, 'the father of idealism'; on the contrary, all materialism depends upon his view of reality." It may, perhaps, be doubted

whether such a view of Parmenides sufficiently explains his undoubted influence on Plato and Plato's reverence for him, but Mr. Burnet is certainly right in maintaining that Parmenides' *ens* was material. For English readers the most interesting part of this chapter will be the discussion of Parmenides' 'Way of Opinion'. Mr. Burnet adopts the simple and captivating view that the 'Way of Opinion' is nothing but a summary of contemporary Pythagorean cosmology. It is beyond doubt that there are numerous elements of Pythagorean physics throughout the second part of the poem—enough, indeed, to justify such a view, if we could satisfy ourselves as to the motive of Parmenides in writing down so much which he held to be false. Mr. Burnet holds that Parmenides (as a dialectician) "finds it necessary to work out the opposite view for just the same reason that Plato found it necessary to write in dialogue"—in order to put us "in a position to criticise and refute the rival theory". Here, again, the stumbling-block is Aristotle, who expressly says (*Met.*, A 5·986^{b}·31) that "Parmenides, being compelled to follow appearances, while assuming that reality, according to λόγος, is one, assumes that, according to αἴσθησις, it is more than one, and postulates that the causes and first-beginnings are two—hot and cold," &c. Even if we could get over this, it must still remain a grave difficulty in Mr. Burnet's view that no ancient writer so much as hints at such a theory of the 'Way of Opinion'. If Parmenides really intended, in the second part of his poem, to give an account of Pythagorean cosmology, in order that we might disbelieve it, he has been singularly successful in concealing his purpose.

In dealing with Empedocles, Mr. Burnet endeavours to show that Empedocles conceived of our present world as belonging not to the period when Love is acquiring supremacy (as is generally assumed), but to the age when Strife is waxing and Love waning. Empedocles himself tells us that a world arises both in the second and in the fourth of his four periods, and many of the cosmological fragments certainly seem to refer to the second period rather than to the fourth. When Strife enters into the Sphere, individual existence begins. The first living creatures to appear are trees and plants—in which, as Empedocles saw, the two sexes are united: when animal organisms begin to appear they are at first "'whole-natured forms' in which neither sex nor species are yet distinguished". These, as Mr. Burnet points out, are "just what we should expect at a time when Hate is only beginning to make its power felt": he might have compared the similar story as to our round ancestors in Plato's *Symposium*. There are, however, some fragments which describe Nature's early attempts at animal creation as resulting in dismembered organisms—'arms widowed of shoulders,' 'eyes without foreheads,' and so on. These Mr. Burnet refers to the fourth period, when Love is encroaching—holding that Empedocles really

describes "two evolutions of animal organisms which take exactly opposite courses, one belonging to the period of the world's history when Strife is prevailing more and more, the other to that when Love is making headway". This view is interesting and suggestive in view of such cosmological traditions as are embodied in the myth of Plato's *Politicus*, and we hope Mr. Burnet will establish it more fully: it is not on the face of it consistent with the doxographical tradition in the *Placita*, V. 19 (R. & P., 137).

Mr. Burnet's account of the Pythagoreans is by far the most intelligible that we remember to have read. It may be a shock to mathematicians to hear that the Pythagorean "points have magnitude, their lines breadth, and their surfaces thickness," but in no other way could the juxtaposition of points have made a line, or of lines a surface, or of surfaces a solid. The saying that "Things are numbers" is shown to mean "Things are made up of geometrical figures," since their numbers are wholly spatial, one being a point, two a line, three a plane, and four a solid. Such a view makes the Pythagorean system mainly a system of physics, and explains the large part which it plays in the physics of Plato's *Timæus*.

Among other noteworthy discussions in this book we would refer to the chapter on Zeno, who is regarded chiefly as a strenuous opponent of the Pythagorean physics, and to the attempt to rehabilitate Melissus by showing that "not only was he the real systematiser of Eleaticism, but he was also able to see, before the pluralists saw it themselves, the only way in which the theory that things are a many could be consistently worked out".

We take leave of the work by expressing the hope that we shall see more works on Greek physical philosophy from the same pen.

J. Adam.

Einleitung in die Moralwissenschaft. Eine Kritik der Ethischen Grundbegriffe. Von Georg Simmel, Privat-docent an der Berliner Universität. Band I. Berlin: Verlag von Wilhelm Hertz (Bessersche Buchhandlung), 1892. Pp. viii., 467.

The general nature of the contents of this volume has been already indicated by Prof. Sidgwick;[1] and I may begin my critical notice of the book by expressing my entire concurrence with the characterisation of it which Prof. Sidgwick has given. It is, as he says, "acute, ingenious, subtle, suggestive, and almost uniformly interesting"; but at the same time it would certainly (Prof. Sidgwick says "perhaps") "be going too far" "to say that it is mature, luminous, well-arranged and convincing". The

[1] No. 3, p. 434.

lack of good arrangement is perhaps the most conspicuous defect. Indeed, the apparent absence of unity in the plan and continuity in the working of it out makes it difficult for a reviewer to give any precise account of the writer's point of view. All that I can pretend to do, in what follows, is to indicate what I conceive to be his general drift, so far as I can gather it from a study of the present work, and a comparison of it with other two books by the same author.[1]

We may say, on the whole, that there are two dominant schools of ethical thought at the present time, just as there were (at least in England) a generation ago. A generation ago the two schools were the intuitional and the utilitarian—both founded on a statical conception of human nature. The two schools at present are both founded on the idea of development; but they regard this idea from opposite points of view. The one is metaphysical and teleological, attending mainly to the principles involved in the process of development and the end to which it is moving. The latter is historical and psychological, looking rather to the beginning of the process and treating it as an event in time. Mr. Simmel belongs very decidedly to the latter of these two schools. His work is thus akin to that of Mr. Spencer, Mr. Leslie Stephen, and Mr. S. Alexander—bearing perhaps most resemblance to the last of the three. His point of view is, however, distinguished from that of all these writers by its consistent and thoroughgoing atomism. He is thoroughly convinced that the explanation of anything is to be found by resolving it into its elementary constituents.[2] He has apparently no fear of losing in this way any "spiritual bond" by which the parts are united. His whole theory of Ethics depends on the acceptance of this point of view.

It follows that Ethics is not to be regarded from a teleological point of view, as a science of ideals or of an absolute end. This would be to introduce the "spiritual bond" which Mr. Simmel insists on omitting. Ethics, according to him, is a purely natural science, being a part at once of Psychology, of Sociology, and of History (p. iii.). It does not investigate what ought to happen, but only tries to find out what actually happens and what are the laws according to which it happens (*Geschichtsphilosophie*, p. 90). It is doubtful whether it ought to be regarded as a separate science at all (p. iv.). Probably in the long run it will not be so treated, but rather merged in Psychology, Sociology and History. It is, at any rate, not properly a normative science, a

[1] *Ueber sociale Differenzierung* and *Die Probleme der Geschichtsphilosophie.*

[2] See, *e.g.*, *Probleme der Geschichtsphilosophie*, p. 39. "The only real things are the movements of the smallest parts and the laws which regulate them." *Cf. Sociale Differenzierung*, p. 11. "If we follow out individualism in a really consequent way, the only realities that remain are the indivisible atoms, and every composite thing must be regarded as only a reality of the second degree."

science that lays down laws to be obeyed, but a science that accepts certain ends given in the wills of individual human beings, and investigates the relations of these (p. 321). Consequently, the imperatives with which it is concerned are not, as Kant thought, categorical, but only hypothetical (p. 322). They depend simply on the empirical fact that certain ends are pursued by individual human wills.

The hypothetical "ought" (*Das Sollen*) with which Ethics is thus concerned is an ultimate, unanalysable, and undefinable element of consciousness (p. 8). It may, however, apparently be described and explained. It is a *feeling* (*Gefühl*, p. 7) that accompanies certain kinds of presentations, just as other kinds of presentations are accompanied by the feeling of reality. It is, however, also described as a *conception* (*Begriff*, p. 3), and as a mode of *thought* (*Denkmodus*, p. 9). Perhaps Mr. Simmel means that it is a conception accompanied by a peculiar kind of feeling. This conception or feeling is analogous (p. 3) to the conception or feeling of being, reality, or truth (all apparently used as synonymous). The conception or feeling of "ought," in fact, stands midway between being and not-being (p. 8), just as the conceptions or feelings of willing, hoping, being able, &c. (*das Wollen, das Hoffen, das Können*) do. We are consequently led to inquire what Mr. Simmel understands by being, reality, or truth, *i.e.*, what is the metaphysical basis on which his Ethics rests.

Apparently Mr. Simmel starts by accepting (p. 33) Kant's idea of a *Ding an sich*, in spite of all the criticisms that have been passed upon this idea. He says, indeed, with regard to this *Ding an sich* that "we know nothing more about it than that we cannot know anything about it". Nevertheless, this unintelligible entity (or nonentity) is to be postulated. "Since," he says,[1] "the things themselves do not pass over into our faculty of presentation, it follows that agreement with these, truth of thought, is only a psychological condition of the latter, a colouring and a definite feeling of tension in consciousness." Truth is further defined in this way: "The majority of the coherent and consistent contents of consciousness we call truth" (p. 3). The minority, on the other hand, or those that do not cohere, we regard as illusion. This is the definition of truth for the individual. There is, however, also, what may be called *Wahrheit für die Gattung* (p. 151); and this is a deeper kind of truth than mere truth for the individual; so that we may even say broadly (p. 3) that "truth is the presentation for the race, error the merely individual presentation". These are the clearest statements that I have been able to find of Mr. Simmel's view on this matter. He says in another passage[2] that "the presentations and actions of the world in general (*der Allgemeinheit*) constitute the norm by

[1] *Geschichtsphilosophie*, p. 97.

[2] *Ueber sociale Differenzierung*, p. 88.

which we judge of correctness or error in the individual. We have in the end no other criterion of truth than the possibility of persuading every sufficiently cultivated individual of it." The ultimate criterion of truth, then, appears to be the judgment of a typical individual—*i.e.*, an individual who belongs to what Mr. Simmel elsewhere (p. 224) describes as the "compact majority". In short, the criterion is a refined form of the *consensus gentium.*

Now the conception or feeling of "ought," as we have already been informed, is analogous to that of reality or truth. Here also the explanation is to be found by reference to the social type, which supplies us with the norm for individual conduct (pp. 69 *sqq.*). Mr. Simmel remarks here that "the normal has a double sense: first, what is universal or generic; second, what ought to happen". He thinks that the connexion between the two meanings is to be found in the fact that what is normal for the race in the first sense is normal for the individual in the second sense (p. 69). In order to understand this more clearly, however, we must consider briefly what Mr. Simmel's view of society is.

It has been already stated that he is a thorough-going atomist. He carries out this point of view consistently in his treatment both of the individual consciousness and of the social unity. "The Self is nothing else than the sum-total of the present activities and presentations" (p. 143); or, if we use the term in a narrower sense, it is "the compact majority of our psychical contents" (p. 224). Accordingly, there is no real unity in our individual consciousness. Our consciousness is simply a collection of presentations on the one hand and desires on the other. Apparently Mr. Simmel draws no distinction between desires and will.[1] Will, I suppose, he would regard simply as the strongest desire at a given moment, or perhaps as the "compact majority" of our desires. For this reason he regards it as a tautological statement to say that any one pursues his own interest. It means simply that "he wills what he wills" (p. 135). Apparently he does not perceive that it means rather that he wills what he desires; and this is not a tautology if will and desire are not identical. Similarly, Mr. Simmel declares that "Egoism is an altogether empty general conception," because "a man is so little a single being, so many impulses, wants, ideas, fill him at every moment" (p. 134). He is simply the theatre where these meet and conflict. "We confessedly know absolutely nothing of the constitution of the so-called soul, but all that we can say about it resolves itself into the individual presentations which constitute its real content" (p. 134).

In like manner society is an aggregate, not a real unity. "Society is not a rounded whole, an absolute unity, any more

[1] See especially p. 143, where *Wille* and *Willensakt* (at any rate the former) are apparently employed with reference to desires.

than an individual human being is."[1] "For purposes of knowledge one must not begin with the conception of society, and seek to deduce from the determinations of that the relations and reciprocal influences of its members; on the contrary, we must hold fast by the latter, and treat society as merely a name for the sum of the interactions of these among themselves, and as a name that is applicable to such an aggregate in proportion to the coherence of its parts."[2]

If, then, the moral imperative is to be explained by reference to a social type, this must not be taken to mean that we derive our ideas of duty from the organic whole to which we belong. We must not look for our ethical ideal in the highest development of the social unity, any more than we are to look for it in the highest development of the individual personality. Both of these, we are taught, are empty conceptions. The individual, regarded on the active side, is a sum of impulses; society is a sum of interactions due to these impulses. The best result to aim at, from the individual point of view, is to have free course for a majority of these impulses. "Each individual act of will wins our approval when it represents and realises the greatest possible quantity of the impulses that are present in us. This is indeed an analytical and even an identical proposition, since the We, the approving personality, is nothing else than the sum-total of the present activities and presentations." The aim of the individual, then, is to maximise the impulses that reach their ends. And since this is the end of each individual, the collective end will be the maximisation of the collective will. Accordingly we may state the moral imperative in this way: "Thou shalt will that, the fulfilment of which is at the same time the fulfilment of the largest part of all existing impulses" (p. 139). This principle represents "the positive application and also the fundamental basis of the saying: *Volenti non fit injuria*". "A deed that was contrary to nobody's will could not be unjust" (p. 140). And in proportion as it is conformable to everybody's will, or to the will of the "compact majority," a deed is right. The will of this compact majority embodies itself in social ideals of conduct. "For this reason one often blames a person's wrong acts or words with the expression: one does not say that, one does not do that (*das thut man nicht, das sagt man nicht!*)"(p. 67)—meaning that it is contrary to the practice of the typical man or of the compact majority. The latter also tends to enforce its will by punishments; and the fear of these becomes gradually embodied in the race in the form of conscience. "With regard to the origin of the pain of conscience, I hold it as the most probable view that it is the inherited consequence of those pains which have been

[1] *Sociale Differenzierung*, p. 13.
[2] *Ibid.*, p. 14.

imposed throughout many generations on the performers of deeds contrary to the customary morality" (p. 407).

Having thus evolved morality out of the wills or impulses of individuals, Mr. Simmel might have been expected to give some account of the origin of these impulses themselves. But on this subject not much light is thrown. One point on which he lays a good deal of stress is that these impulses are not to be regarded as primarily egoistic, any more than altruistic. He insists that altruism is quite as "natural" as egoism (pp. 85 *sqq.*). There is, indeed, as we have seen, a sense in which it is tautological to say that a man's actions are egoistic. He necessarily wills what he wills. But in any other sense than this his primitive tendencies are almost as often other-regarding as self-regarding; and many of our natural impulses cannot properly be described as either the one or the other (p. 152). Nor, again, are our impulses to be explained in a hedonistic way. Pleasure, indeed, is under all conditions a value for us (p. 317), and an accompaniment apparently (p. 316) of every desirable activity; but to suppose that it is pleasure that constitutes value is to confound a *conditio sine quâ non* with the efficient cause (p. 316). Pleasure is, moreover, a name for such a variety of diverse feelings (pp. 311-2) that it does not really denote any one definite end to which our aims could be directed. "One cannot discover any definite and unambiguous presentation of happiness, the content of which could be represented as the goal of all human efforts; and all Eudæmonism comes in the end to this, that the actual aims of our activities, which are learned from experience, are represented as constituting happiness" (p. 312). Further, Mr. Simmel thinks (p. 361) that it is a mistake to suppose that the value for consciousness of our feelings is to be estimated simply by adding the pleasures and deducting the pains. It is not a mere residue. On the contrary, the mere *quantity* of our feeling, independently of its pleasure-quality, has a value for consciousness. Hence he even thinks that the moral imperative might be put in this form: "Do that whereby thou mayest immediately and mediately produce a maximum of activity" (p. 371). Thus Mr. Simmel seems to give no definite account of the origin of our impulses, or of their relative values, but rather accepts them as a multitude of given facts, and simply enjoins that they shall be maximised.

This is a general outline of Mr. Simmel's position, so far as I am able to discover it. But the atomism of his point of view seems to have affected his method of exposition, so that it is often difficult to discover any coherent unity either in his line of argument as a whole or in his treatment of particular subjects. Chapter ii., in particular, on Egoism and Altruism, though containing much of the most interesting matter in the book, appears to me to be an almost pathless chaos. Certainly, if Mr. Simmel aims at "persuading every sufficiently cultivated individual" of

the truth of his doctrine, he must endeavour to present it in a clearer and more consecutive form.

I cannot, however, regard Mr. Simmel's positive theory as the most important thing in his book. His theory seems to me to be interesting only as an instance—a very extreme instance—of the present revolt against constructive philosophy in Germany. This return of the sow that has been washed to its wallowing in the mire can hardly be seriously regarded. At least we may wait till Mr. Simmel refutes Kant and his idealistic successors with a thoroughness approximating to that with which these refuted Hume before we reconsider the question of returning to Hume's point of view. Of any attempt at such a refutation, or even of any attempt at a consecutive vindication of his own point of view, I have found no vestige in any of his writings. He scarcely refers to any of his predecessors, except Kant; and his general atomistic point of view seems to be simply taken for granted. Indeed, he appears to be almost incapable of understanding the idea of unity. Whenever he comes across it, he dismisses it at once as Mysticism[1] or "spukender Platonismus".[2] Perhaps the most striking instance of his incapacity to comprehend it is to be found in one of his other books,[3] where he is dealing with the conception of a divine purpose in history. Here he states that a Pantheistic view of the world makes things no clearer, because it is simply a form under which any and every content might be brought; and it leaves the particular facts as they were. Apparently he does not see that the essence of such a view as that of Plato, Spinoza, or Hegel consists in the negation of the view of the world as a mere aggregate of facts.

This incapacity to understand the idea of organic unity seems to me to vitiate Mr. Simmel's whole treatment of Ethics. At the same time I regard his book as one of great interest and value. I have seldom read any work that seemed to me so full of concrete suggestiveness. His treatment of Utilitarianism in the last chapter may be taken as an example.[4] Also his discussion of Egoism and Altruism (chapter ii.), Honour (pp. 190-212), &c. And his book is full, from beginning to end (as is also his earlier and hardly less important work, *Ueber sociale Differenzierung*), of admirable examples, acute analyses, suggestive problems, and pregnant remarks (*e.g.*, "Ich habe wirklich nur das was Ich bin," p. 172). I may refer to his fine observations on Pessimism (especially p. 432), and on Beauty (pp. 435 *sqq.*). The excellence

[1] *E.g.*, *Ueber sociale Differenzierung*, p. 14.

[2] *Ibid.*, p. 10.

[3] *Die Probleme der Geschichtsphilosophie*, pp. 102-3.

[4] I may say, however, that his criticisms of Utilitarianism are seldom, in my judgment, conclusive, and sometimes even shallow. Indeed, a satisfactory criticism of Utilitarianism from the point of view of an atomistic presentationism is scarcely conceivable.

of his concrete matter often leads one to forget the inadequacy of his theory, and even appears to lead himself to the very verge of passing beyond it, so that one is tempted sometimes to exclaim: "Thou art not far from the Kingdom of Heaven!" Thus on p. 148 he illustrates the possibility of taking up a social point of view in a way that strongly suggests that society must be a real unity, and not a mere aggregate. But he saves himself by the caveat that this is due to an illusion. So again, on p. 88, he brings out the point that our moral life involves the conception of an ideal social unity. Here also he suggests a deeper view than his own.

In the richness and suggestiveness of his illustrations Mr. Simmel's work frequently reminds one of that of Dr. Paulsen. He seems to me, however, to lack that perfect good sense and maturity of thought by which Paulsen is so eminently distinguished. He frequently verges on paradox, and sometimes passes over entirely into it. As illustrations I may refer to his views about duelling (pp. 194-5), and to his explanation of the idea that happiness ought to follow virtue (p. 395). One of his arguments on temptation (p. 249) seems to turn on a pun. Even his paradoxes, however, are often highly instructive, and sometimes suggest a more adequate explanation which would remove the paradox. Thus, on p. 246, he remarks that it is often said that temptation or sin was too strong for a man; whereas we might with equal justice say that virtue was too strong for him. But the reason why we do not naturally say this seems clearly to be that the true self is the rational or virtuous self, and that consequently we do not regard this as a force against which the self struggles. Similarly, when he objects to Kant's idea that the virtuous man is free, and observes that a wicked man who had entirely stifled his conscience would be equally free (p. 289), the answer seems to be again that this would be so only if the true self could be found in wickedness and irrationality.

J. S. MACKENZIE.

VII.—NEW BOOKS.

By Various Hands.

Distinction and the Criticism of Beliefs. By Alfred Sidgwick. London: Longmans, Green & Co., 1892. Pp. viii., 279.

The aim of this book is briefly indicated by the quotations from Locke which appear upon the title-page. It is intended as a contribution to the art of clear thinking, the method recommended being careful attention to context in the use and interpretation of words. The author holds with Bacon that "words, like the Tartar's bow, shoot back upon the understanding and do mightily entangle and perplex the judgment"; and it is for this source of confusion in thought that he is concerned to find a remedy.

It is to be observed that in Mr. Sidgwick's view the ambiguity of language which causes confusion of thought is due to "artificial sharpness" or "unreal distinctness";—by which he means that to the perfectly sharp and definite distinctions of language—right and wrong, straight and crooked, man and beast, blue and not-blue—there corresponds in Nature (that is, in the things and qualities to which the words apply) not similar sharp and definite distinctions, but a continuity in which things and qualities shade into each other by insensible degrees, in which any absolute distinction, any sharp marking-off of A from not-A, is unknown. So that, in fact, perfect classifications are to be regarded as not only unattained but unattainable. The same idea is roughly expressed by Whewell in his doctrine that "groups are given by Type, not by Definition".

The remedy for ambiguity which Mr. Sidgwick suggests—reference to context to the "special occasion"—is formulated as follows on p. 143: "The validity of any distinction is relative to the purpose for which it is used at the time". (*Relativity to purpose*, from the speaker's point of view, corresponds to *reference to context* from the hearer's point of view.)

As the *dicta* above quoted have to be here presented without context, two points seem to call for notice: (1) the use of the word *distinction* where *definition* might be expected; (2) the apparently decisive and universal rejection of anything like general definitions. As regards (1) it only needs to be observed that defining a word consists in deciding whether it connotes given characteristics or their negatives, *A* or *not-A*, &c. As regards (2) Mr. Sidgwick speaks of controversy, and especially controversy concerning "immaterial things—abstractions or ideals," as the region in which 'effective ambiguity' is principally to be found (*cf.* p. 229) recognising the existence of a body of *truisms* (in the sense of *propositions that are not questionable*); and he uses current language with ordinary confidence. Hence it appears that in his actual treatment the application of scepticism to language is limited, being, it seems to me, practically (and appropriately) confined to the "debatable outworks". Every one would of course admit that in a living and growing language there must be such a region—speech is an embodiment of thought, and a living language must change as the thought of those who use it changes; thus it is that we get fresh words to suit fresh discoveries and fresh

analyses, and the specialisation and generalisation of words by which language is from time to time so importantly modified, including the "spoiling" of words which Mr. Sidgwick discusses in ch. viii.

In theory, however, Mr. Sidgwick would apparently defend in its full breadth the view that "*all* distinctions are *really* rough" because all Nature is continuous. By a *rough distinction* is meant "a distinction where the contrasted notions, even at their sharpest (A and non-A), cannot be applied with perfect exactness to actual cases; where the actual cases cannot always be classed with strict right as either the one or the other, but where a certain proportion of them belong to a doubtful borderland" (p. 15). "Between the opposites *good* and *bad* . . . we insert a vague intermediate region called *indifferent;* where does this end, or what are the exact limits of *middle-age* or of the *middle classes?*" (p. 16). The difficulty is got over by allowing distinctions that *are* 'rough' to be *treated* as though they were 'sharp' on special occasions—what is 'really rough' is made 'artificially sharp'. In other words, though sweeping definitions are regarded as inadmissible, definitions for a limited and passing purpose are to be allowed. Or (to use still simpler terms) words must be consciously and deliberately interpreted by reference to context.

The whole book is very fresh in thought and expression, and shows many old questions in new and interesting aspects. Take, for instance (in addition to points already indicated), the treatment of controversy in ch. iv. and elsewhere. The discussion of this subject is original and admirable, and seems to me to be one of the most attractive portions of a book which is excellent reading throughout. It is, however, one to which it is difficult to do justice within the limits of a short notice, partly because it is so full of suggestion and provocative of discussion, partly because, in spite of clear style and happy illustration, it is not always easy to grasp the author's meaning fully, nor when grasped to summarise it.

Still on the whole what I regard as the main lesson which it teaches stands out clear and distinct—the doctrine, namely, that we can only interpret another's thought as expressed in language by careful reference to context; that a mere word or a mere label may on a special occasion (and practically we always have to do with special occasions) be valueless or hampering or misleading—that we must make our dictionaries by reference to authors rather than interpret authors by the dictionary.

We should have liked to say something about several other questions raised or suggested by Mr. Sidgwick—especially the Laws of Thought, the relation of Language to Thought, and of Nature to Language—the question of agreement between speaker and audience—the use of the terms Continuity and Distinction, Nature, Natural, Real, Artificial, 'Reference' and 'Descriptive' names. But space fails, and I must limit myself to a concluding remark on Distinction and the Continuity of Nature. Though admitting unreservedly the necessity and value of reference to context, I am not in sympathy with the theory of 'rough' and 'sharp' distinction which Mr. Sidgwick uses to express his view. For let it be granted that 'Nature is continuous'—still it seems to me that real distinction is not excluded, since there can be no continuity without difference—that the difference or distinction or change is as 'real' as the continuity, and that the continuity is as 'artificial' as the distinction. Surely men have not made language by "taking words at pleasure" and using them arbitrarily or perversely to indicate distinctions which are not real—every distinction which is sufficiently strong to have impressed language must also have been sufficiently

strong to have impressed many minds, and must therefore surely be real though its *value* may be limited. No individual man can despotically alter or add to a language which is the common instrument of a multitude any more than he can alter commonly accepted morality. We wish, no doubt, in our intercourse with others, to understand them and to be understood by them, and use words to that end; but no one is likely to be understood unless he uses language, in the main, as others use it—for this reason, that others have not used it arbitrarily but with a general endeavour to fit language to things and to their thought about things. Still doubtless language is improvable, as morality is improvable, by those who have surpassed to some extent the level of common ethics or common thought. And to such Mr. Sidgwick's book is likely to appeal with special force.

An Introduction to General Logic. By E. E. Constance Jones. London: Longmans, Green & Co., 1892. Pp. xxiii., 283.

This volume is intended as a "First Logic Book" which may be used in teaching beginners, and at the same time furnish a connected, though brief, sketch of the science. It diverges at several points from traditional doctrine, but the reasons for most of the divergencies have been already explained in the author's earlier work, and are omitted here.

About one fourth of the total space is reserved for Notes on topics not included in the systematic doctrine, but of historical or conventional interest, for a useful selection of questions borrowed chiefly from Jevons and from Cambridge Examination papers, and for an Index and Logical Vocabulary. Another fourth is given to the Import of Propositions and the Classification of Terms and Propositions, another to the Inferences, Immediate and Mediate, which are usually styled Deductive, about one eighth to Inductive Inference and the *quasi*-inductive topics of Division and Classification and Definition, and another eighth to Fallacies and the Scope and Categories of Logical Science.

On this partial submergence of Inductive Logic we may remark that not merely the conventional forms of Deduction are allowed to displace it, but a more thorough analysis of Import than is usual in elementary manuals; and, further, that the author's conception of the scope of Logic could scarcely be consistently worked out except by sacrificing some of the interests which have shaped the modern department of Induction.

Logic is defined as the science of Propositions. The author does not pretend to refer back the system of our propositions to any ultimate corrective outside itself, whether mental or objective. She assumes that within the system may be found some propositions that are self-evident, and "that what is self-evident ought to be believed". And in her analysis of Import, the soundings do not go to a deeper level than that of the phenomena of language. What propositions deal with is "identity of application" of names, amid diversity of the characterisation which they effect. Under the influence of a conception such as this the reader must expect a special distribution of interest among the several topics usually noticed. The classification of terms and of propositions becomes very important. Distinctions must be explicitly drawn where a conceptual logician or a material logician might pass by with indifference. The author has here omitted some of the less important distinctions which she made in the Elements of Logic, but her distinctions are still more elaborate than those current in manuals. And we think that her terminology also has not without special justification broken away from traditions; and that the assignment made of the function of quantification in inference, the appreciation of the conditions under which inference

may take place within quantitative and other complexes of relation, and the rearrangement and expansion of the scheme of Immediate Inferences, are all appropriate and valuable contributions to nominalist Logic.

But while a Science of Propositions gains thus in elaboration of content, it seems to lose in width of sphere. Induction must become a mode of manipulating propositions rather than an analysis of facts and an elimination of the unessential. The author includes it among Categorical Mediate Inferences, and distinguishes it from Deduction by the widening in the conclusion of the subject, which was narrower in the minor premiss. A passage from particularity to universality is afforded by means of a suppressed major, thus : Whatever has once been a cause of Y will be always a cause of Y ; X has been once a cause of Y ; therefore X will be always a cause of Y (= All X is cause of Y). So much for the generalising process. The justification of minor premisses for such syllogisms is accomplished by ordinary hypothetical syllogisms of which the major premisses are simply canons of the experimental methods or of analogy, and the minor premisses statements that an instance conforms to its canon.

The ideas of Uniformity and causal Interdependence which are used in this scheme of Inductive Inference are explained with marked care, as also in the final chapter are the nature of Identity and Diversity and the Laws of Thought. This thoroughness in the treatment of first principles, combined with the elaboration already noticed of the doctrine of Terms and Propositions, will give to the book a place of its own among our recognised means of logical discipline. But not all teachers will accept it as of itself sufficient. The hourly interest of our thoughts is directly in Things, and need must be felt of a system of doctrine which penetrates beneath the syllogistic layer of inductive thought, formulating conditions of success in unravelling the complexities of Nature itself without the conscious mediation of propositions.

The Elements of Ethics. By J. H. Muirhead, M.A. London : John Murray, University Extension Manuals, 1892. Pp. xi., 239.

It was quite time that there should be offered to English readers a popular introduction to Ethics from the point of view of the flourishing school of English and Scottish Hegelians. This is now available in Mr. Muirhead's little book, which consists of an exposition of the realisation of Self in Common Good as the Ethical end, with criticism of competing methods and general definition of the scope and aims of the science. The criticism of Hedonism is well up to date ; every advantage of recent endeavours to amend it by reference to Evolution being liberally allowed. The student who makes his first acquaintance with Ethics through this manual may afterwards find in Hedonism more than Mr. Muirhead does ; but at least he will have been guarded from its cruder forms, and it will be his own fault if he mistakes psychological and biological generalisations for ethical principles. In what, for brief, we may call Hegelian Ethics Mr. Muirhead has evidently made the position his own, and his exposition reads as if coming warm from the writer's mind, an indispensable condition of success for an introductory teaching book.

Some defects must be noticed briefly. Why does Mr. Muirhead take the end parallel to Pleasure to be Self-sacrifice ? Has any solid theory ever stood upon a negative ? And are there not within English Ethics alone writers who gave some force to their exposition of Reason as a positive source of Ethical principle ?

Further, the treatment of the Intuitional Theory in §§ 30-32, though very clear and telling, represents that Theory as so fragile that the student will afterwards be surprised to learn the part it played in English and Scottish Ethics for a century after Locke's 'classic proof' (p. 76) of its untenability in one of its principal forms; there should be some reference to the Morality based upon Sentiment; there is no mention of authority as based upon Affection or Love in § 29; and as the examination of the objects of moral judgment discloses three objects (§ 35), should not something be offered as a guide to the specific conditions when one rather than another is preferred?

In point of arrangement the book requires emendation: book iv. should not be separate from book iii.; they both deal with Ends; and why does another End make a fissure in the examination of Pleasure? Such faults are evidently a result of the arrangement for lectures which should be avoided in the book.

The classified list of English works at the end will be useful, and there are frequent references to standard writers in notes at the foot of the pages.

In style and general manner Mr. Muirhead has successfully grappled with the great difficulty of presenting a contentious subject within 230 small pages; his illustrations are sometimes unnecessarily trivial, and on the other hand he often allows himself to use obscure technicalities of phrase; but on the whole there is vigour, brightness, and fluency in his work; and a student who takes this as his first book in the subject will not be likely to let it be his last.

An Introduction to Ethics. By J. Clark Murray, LL.D., Professor of Philosophy, McGill College, Montreal. London: Alexander Garner, 1892. Pp. 407.

Dr. Clark Murray's work is more mature than Mr. Muirhead's, but it is not so modern in its position or its tone. Even less than Mr. Muirhead's, should it be called a 'Handbook,' as is done on the cover; besides, being unsystematic in its historical references, it contains no apparatus of study, not even a bibliography. It is an Introduction to the Science by means of an exposition from a certain standpoint combined with criticism of certain prominent counter-positions. The standpoint occupied by Dr. Murray is that of Idealism: he believes in an absolute imperative, and he lays out his subject as the science of Ideal human character. The special interest is the close and intimate acquaintance with Psychological Empiricism. It is to students who have come under Empirical influence at the outset of their studies in the Moral Sciences that this work is likely to be of the greatest assistance, as they will find their leaders from Mill to Mr. Leslie Stephen well driven to bay by arguments which they cannot refuse to meet—it is no conflict of Fox and Eagle, as is too often the case between the two main Theories of Ethics offered to the student of to-day.

While, however, Psychological interest is the source of special strength in this Introduction, it is also the source of its weakness as a presentment of the whole subject. Dr. Murray seems to be in some entanglement as between the subjective and the objective side of Ethics. He regards them as so related that they can be treated separately, and he makes their separation the basis of his order of procedure. First, he gives us a sketch (130 pages), on the subjective side, of Man as conscious of Obligation; and then another (100 pages), on the objective side, of the Obligation of which Man is conscious. The reason for this dual treatment

is not made clear; and the impossibility of maintaining the separation is manifest in the constant necessity of referring to the objective side by anticipation while sketching the subjective aspect—see pages 44, 46, 48, 62, 72, and 116. In this respect Dr. Murray evidences his kinship with the English Masters of Ethics; and perhaps it may be taken to be the leading contrast between his book and the Neo-Hegelian method and tone of Mr. Muirhead's. Apart, however, from this forced separation and consequent necessity of anticipation and repetition, the treatment is vigorous and the points of discussion are distinctly brought out.

The third section of the book, which is two-fifths of the whole, is devoted to Material Ethics—to the classification of Duties and to Virtue as the habit of Right or Good Conduct. This section adds very considerably to the value of the book as an Introduction. The student ought not to be so introduced to the science as to have any excuse for supposing that it is wholly occupied with a battle upon fundamental principles. In this department Dr. Murray is somewhat old-fashioned: the time-honoured divisions of Duties into Personal and Social, and into Determinate and Indeterminate, which Mr. Muirhead will no longer hear of, are sufficient for him. The section is full of matter and rich in psychological and ethical reflexions vigorously and impressively set forth, which, if not precisely new, give full impression of being first-hand. We would note as an example the treatment of the necessity for Training, p. 385 onwards.

Dr. Murray seems again carried away by his psychological propensities in his treatment of the relation of Ethics to Theology. He is of the same mind as Mr. Muirhead, believing that no Ethics can completely justify itself, but instead of giving a separate section to this ultimate topic he treats of it when engaged in an Exposition of the Education of Conscience. What he says is well said, however, and could easily be made worthy of its proper position.

Dr. Murray's style is singularly clear, weighty, and dignified; he eschews phrases and is independent of catch-words. His examples and illustrations are serious. His treatment of the great topics of moral interest is at once large, intimate, and firm.

On the Perception of Small Differences. By G. S. Fullerton and J. McK. Cattell. Philadelphia: University of Pennsylvania Press, 1892. Pp. 159.

The authors of this investigation have already published in Mind a short summary of their results; so that it is unnecessary to set forth the contents of the monograph in detail. The aim of the research is the testing of the respective claims of the four psychophysical measurement-methods to determine the fineness of our sensational discrimination, and of those of Weber's law to be the expression of a constant relation existing between stimulus and sensation. The mental processes experimented upon are experiences of movement (Kinæsthesis), the "muscular sense" (lifting of weights) and sensations of light.

The selection of the two former departments of perception is somewhat surprising. "The complexity of the perception of movement," say the writers, "is so considerable, that there is much difference of opinion as to its nature, and for its study exact experiments are needed." But, in this case, the problem would be the isolation and variation of the separate factors which enter into the conscious state, and the examination of them by an approved method. The authors, on the contrary, treat the consciousness of movement as though it were a

simple process, and vary their stimuli just as is done for the pure sensations. There is no furtherance of psychological analysis in the perfunctory remarks on pp. 26-28. How do we judge of the extent of a movement? We are only referred to the influence of a sensation of strain, when the movement is comparatively extensive; and to memory.[1] More valuable is the observation that in judgments of force the reagent "was helped . . . by the variation in extent," and possibly also by the time. On the whole, however, force of movement was, in their experiments, more correctly estimated than time. This fact, taken in connexion with the results of direct experimentation with lifted weights, leads the writers to the conclusion that the hypothesis of Müller and Schumann must be given up; the perception of difference of weight is attributable rather to sensations accompanying the movements of wrist or forearm. The question is most important: but the conditions of the experiments of the last-mentioned investigators must be now exactly repeated, and their position met more in detail, before we venture to throw overboard their correlation of judgment of heaviness of weight and rapidity of movement.

The mention of this correlation—which is *not* Weber's law—brings one to the treatment of Weber's law in the present research. The authors find that their experiments upon movement do not confirm it. Well, why should they? Weber's law is the law of the correlation of difference in amount of stimulus and estimated difference of sensation. But here we are admittedly dealing with complicated processes, fusions of sensations; and not with sensations proper. If an uniformity like Weber's law could be proved—certain of the conditions of experiment in the investigation into extent and force of movement would go to make this difficult—we should be in presence of an interesting psychophysical discovery; but not of Weber's law.

In place of Weber's law is set up the principle[2] that "the error of observation tends to increase as the square root of the magnitude". This "error of observation," regarded by the writers as a physical quantity, is in essential an expression for the limen of difference of the first method, the measure of precision (limen of difference) of the second, and the mean variable error of the third. I cannot but think that the latter terminology is the more correct; the physical phrase seems unsuitable for the rendering of an attribute of consciousness. In physics, and in the natural sciences generally, the word 'error' is in place: the objective result is affected by the subjective factor. But for the psychologist, this latter is itself the material for investigation. The advantage of its exact analysis, in the way in which psychophysics undertakes it, is by the writers given up at the outset. The law itself appears to me to be both mathematically and psychologically untenable: psychologically, because (to take the instance given) the interval 2″ is not, for consciousness, composed of two 1″ intervals.

The objections taken to the method of minimal changes have been stated before, if not so forcibly. Even granted that they all hold, as regards the investigation of movement, the method is not thereby discredited for the study of pure sensation (*cf.*, *e.g.*, Müller's definition of

[1] The writers appear to use the term 'memory' as equivalent both to memory proper and to *Einstellung*. Is there a colourless English word which corresponds to this latter?

[2] One of the authors (Prof. Fullerton) gives only a qualified assent to this formulation; partly on mathematical grounds.

the just noticeable difference). The exposition of the method of right and wrong cases (pp. 12-18) is exceedingly clear and good. It is interesting to note that the writers lay great stress on the association-factor, as influencing judgments recorded by the method of mean gradations. But this holds surely only as regards Merkel's method : and, in that connexion, the same observation had been made by Prof. Angell.

The tables and descriptions of experiments are models of simplicity and carefulness : indeed, the few technical objections which a critic would raise are, for the most part, indicated by the writers themselves. The most grave of these would be urged against the selection of a rectilinear movement, instead of a circular (*i.e.*, of a movement along the circumference of the circle, of which the moved limb is the radius). The discrimination between the error of adjustment and the error of perception is hardly successfully carried out. The observers have merely distinguished the willed from the executed movement. Where a discrepancy of this character obtains, the experiment is useless for the method of mean error. Müller's remark refers to the cases in which idea and execution tally. The monograph contains much that is valuable for the employment of the methods ; and many interesting psychophysical facts (as to practice, memory, &c.) come to light in the course of the discussion. What the reader misses is, as I said at the outset, a deeper going psychological (and physiological) analysis of the processes under investigation. And the conclusions of the paper are too radical to justify the curtness of the references to previous work.

The chapter on light-sensations stands, psychologically regarded, apart from the rest of the research, in spite of the assimilation of the experimental method to those previously used. The just noticeable difference was found to be about one-seventh of the stimulus. But, in the first place, the illuminated area of the retina was small, and the stimuli faint; while, secondly, the fact that the compared sensations were successive—which led to the result that the "muscular sense" is about as accurate again as the sense of sight!—may very well account for a divergence of results from those of earlier investigators.

Éléments de Philosophie. Par George L. Fonsegrive, Paris. A. Picard et Kaan, 1892. Vol. II. Pp. 672.

Prof. Fonsegrive's first volume was devoted to Psychology. In this second and concluding volume he treats of Logic, Metaphysics, Ethics, and History of Philosophy. As a text-book his work has certain conspicuous merits. It is definite, lucid, and systematic throughout. On the other hand, it cannot be said to be in any high degree stimulating or suggestive. Philosophy, taught as M. Fonsegrive teaches it, forfeits to a large extent its distinctive value as a means of education. This value lies in its power to make the learner think for himself, instead of providing him with thoughts ready-made. But in this book everything is mapped out with dogmatic neatness and precision. There is nowhere any invitation to the reader to share with the writer the "labour of the notion". There is no trace of the maieutic art.

As regards accuracy and soundness Prof. Fonsegrive's work is on the whole worthy rather of praise than of blame. Perhaps its gravest defect in this respect is a failure to understand and appreciate Kant. The various philosophical systems are divided in accordance with the Kantian classification under the heads, Scepticism, Criticism, and Dogmatism. Prof. Fonsegrive, with good reason, declares himself to be a Dogmatist. But when we inquire how he meets the objections of Kant,

we find that he entirely misapprehends the standpoint of Criticism. Thus he writes (p. 187), "According to this system (the Kantian) there are a number of principles or laws which govern, each in its turn, our representations. Now, nothing in the system explains why in actual experience one principle is applied rather than another, or why it is sometimes impossible to apply this or that principle to certain of our representations. . . . But if my principles were really constructive of my experience in its entirety, they ought always to be applicable, any of them whatever to any representation whatever. A purely passive matter will never refuse to run in any fashion into any mould." No one could write in this way unless he thoroughly misconceived the fundamental doctrine of Kant, that objects are *given* in sense and only *thought* by the understanding. Indeed, it is difficult to understand how on such an interpretation of Kant there can be any meaning in the distinction between the theoretical and the practical reason. Prof. Fonsegrive evidently supposes Kant's view to be that thought actually *manufactures* the physical world out of the raw material of sense.

The sketch of the History of Philosophy is on the whole fairly good. Aristotle, Bacon, Descartes, Leibniz, and Berkeley are treated best. Locke and Hume might just as well have been omitted. No one could gather the slightest hint of their meaning and importance from what is said of them. Perhaps the most striking inaccuracy is found in the account of Socrates, who, according to Prof. Fonsegrive, opposed his *Dogmatism* to the *Scepticism* of the Sophists.

At the end of the volume there is a list of subjects for dissertations given at the Sorbonne and elsewhere which occupies no less than 44 pages.

Arnoldi Geulincx Antverpensis *Opera Philosophica*. Recognovit J. P. N. Land. Volumen secundum. Hagæ Comitum apud Martinum Nijhoff, MDCCCXCII. Pp. viii., 520.

Prof. Land is discharging with exemplary punctuality, and also with exemplary care in all other respects, the important philosophical enterprise which is the complement of his (and Van Vloten's) previous labour on Spinoza. To his sumptuous collected edition of the great Occasionalist's scattered, or hitherto unpublished, writings, there now remains only to be added the third and final volume, which may be expected a year hence as the present volume has followed within a year of the first (see Mind, No. 64, p. 552). As the logical matter could not be all included in vol. i., so now from vol. ii. among the systematic works has had to be left over the *Ethica*, by which thus far Geulincx has been best known (or least unknown); but the volume offers, notwithstanding, much of the highest interest. As under the head of *Metaphysica* we have both his own "true" (Cartesian) doctrine and his version of the Peripatetic tradition, so under *Physica* there is now given, before his "true" explanation of natural phenomena, a hitherto unknown treatise plumply designated *Physica falsa sive ad mentem Peripateticorum*. Otherwise interesting, in connexion with the *Methodus inveniendi Argumenta* and a previously unknown *Tractatus de officio Disputantium* placed first in the volume, is the series, with which the volume ends, of actual *Disputationes* on matters logical, metaphysical and physical in which Geulincx himself officially took part during his last years. His use of the old forms of discussion at a time when he was so irrevocably committed to the positions of the new philosophy has a peculiar interest. As soon as the *Ethica* and other remaining works appear, there should be no delay in

attempting to fix a notion of Geulincx's whole philosophical performance. That it stands in special relation to much that is regarded as specially characteristic of English thinkers has not escaped observation, even with his works so hard of access as they have hitherto been. Phenomenism with a difference—so, perhaps, may his view of things be described. The difference is there and it is not small (as it is there and not small in Berkeley compared with other English philosophers); but for all effective purposes, there the Phenomenism is no less.

Die Probleme der Geschichtsphilosophie. Eine erkenntnistheoretische Studie. Von Georg Simmel, Privat-docent an der Berliner Universität. Leipzig: Verlag von Duncker und Humblot, 1892. Pp. x., 109.

This little pamphlet is primarily a discussion of the aim and method of a philosophy of history, but incidentally it is much more than this. In discussing the function of the philosophy of history, Mr. Simmel is led to indicate with considerable fulness the nature of his general theory of knowledge, and his view of the relation of philosophy to the sciences. It is a work of great interest to all students of psychology and philosophy, and will be especially interesting to readers of Mr. Simmel's larger work, *Einleitung in die Moralwissenschaft.* It is divided into three chapters—I. On the psychological presuppositions involved in the study of history. II. On historical laws. III. On the significance of history. In the first chapter he points out that history is concerned with psychical phenomena, and that these are not direct objects of observation. The question is, how the historian is able to know them. "Since it is the taste of history not merely to know facts of knowledge but also facts of will and feeling, this taste can only be fulfilled in so far as by some psychical means the facts of will are rewilled and the facts of feeling refelt by the historian" (p. 15). "The difficulty is that the phenomena thus produced in me are at the same time not mine, that I think of them as historical facts, while at the same time I am conscious of them in my own mind, so that I have to regard them at once as my own presentations and as those of some one else" (p. 16). The discussion of this problem leads him into an interesting examination of what is meant by genius, especially the dramatic genius which enables a man to put himself in the position of another. He concludes (p. 25) that it is to be explained by a sort of Platonic "reminiscence" of the experiences of the race. In the second chapter he considers the question why it is that there is a philosophy of history rather than a science of it, and concludes that the explanation is that the phenomena here dealt with are too complex to be analysed into their atomic constituents, as the physical sciences analyse their facts. Consequently, we cannot arrive at exact scientific laws in this case, but only at derivative laws of a more or less speculative character. Now, "philosophy is a kind of preliminary science, whose more general conceptions and principles help us to bring phenomena into a certain systematic order, until the analysis of them shall lead us to a true scientific knowledge of their elements, and to an exact insight into the active forces that underlie them" (p. 60). "Philosophic reflexion fulfils the function of the Baptist; it supplies hints, conjectures, and sketches for some one else to fill in" (p. 63). The concluding chapter carries this idea farther, and contains an attack on the philosophical conception of a meaning, significance, value, or "divine purpose" in history. Since each individual sets certain ends before him in his life, it is a natural error to suppose that humanity as a whole, being a collection of individuals, is also moving towards certain

ends. But in reality teleological conceptions are quite as inapplicable to history as to the material world (p. 100). He concludes by saying (p. 105) that metaphysical speculation has sometimes been referred to a sort of artistic impulse. It might be truer to refer it to the play-impulse. It has only a sort of symbolic value. The philosopher is like a child who takes "a stick for a horse, a piece of wood with a rag round it for a doll, and a doll for a human being". "Just as we say of the senses that they do not err, not because they always judge rightly, but because they do not judge at all; so we may say of metaphysics that it never misunderstands its objects, not because it has always a correct knowledge of them, but because it does not understand them at all" (p. 104). All this is interesting as illustrating the extremest form of the German reaction against philosophy.

Vorlesungen über die Menschen-und Thierseele. Von W. WUNDT. 2te, umgearbeitete Aufl. Leipzig: L. Voss, 1892. Pp. xii., 495.

Twenty-nine years have elapsed since the publication of the first edition of these lectures—perhaps in England the best known and oftenest quoted of any of Prof. Wundt's works. That the author has at length undertaken the task of correction and revision, in preference to rewriting the book altogether, is due, as he tells us in the new preface, mainly to two reasons. Firstly, a considerable portion of the original might remain unaltered; and the clearness and freshness of the early exposition would hardly be attained again. But, secondly, much of the old book was out of date, and many views found representation in it which the writer is not now prepared to uphold. The new edition is, therefore, more than a reissue of a more or less popular work: it is the reflexion of Prof. Wundt's present attitude to a whole series of vexed psychological questions.

The appearance of the book is greatly altered. In place of the two volumes, with their nearly 1000 pages, we have a single volume, with about half that number; while the fifty-seven lectures have become thirty. The most obvious cause of this curtailment is the omission of the lectures on *Völkerpsychologie*, and of the "Additions and Remarks" printed at the end of each of the former volumes. One may, perhaps, hope that the suppression of the former means the publication of a separate work: indeed, the words of the preface seem capable of such an interpretation.

The first four lectures correspond pretty nearly (though the first is greatly shortened) to chapters of the first edition. They contain a brief sketch of the development of psychology, a statement of the ultimates of psychological analysis, and the treatment of the intensity of sensation. Sensations are defined as the irreducible elements of ideas; a definition which seems more correct than the general one of the *Phys. Psych.*, although, of course, the difficulty is only shifted from *Empfindung* to *Vorstellung*. The exposition of the measurement of intensity of sensation, and of Weber's law, which has become a *locus classicus* in psychological literature, stands practically as it did. What is lost in comprehensiveness by referring merely to a single psychological method is more than gained in lucidity. The only change is the substitution of the psychological standpoint. The question as to the existence of "negative" sensations is rather one of terminology than of anything else. Consistently with his view that the sensation is something which is simply dependent on alteration of stimulus, whether the alteration be noticed or not, the author always speaks, in connexion with Weber's law, of our

estimation of sensational difference. Lectures 3-6, inclusive, of the old edition, which were mainly physiological and logical, are unrepresented in the new, if we except the paragraphs on the rapidity of thought, which are referred to in a different connexion (pp. 290 ff.).

The fifth, sixth and seventh lectures, which have undergone a complete revision, deal with the quality of sensation. The notion of sensational fusion is introduced in the section on clang-colour; the phenomenon seems to be regarded merely as intimate association (*cf.* pp. 308, 151). The law regulating our sensibility to difference for tone-quality is discussed at length. Helmholtz' theory of colour-perception, which the writer has long since given up, has been replaced by brief criticisms of Helmholtz and Hering, and a paragraph on his own theory. Contrast-phenomena, again, are no longer referred to deception of judgment, but to the general law of relativity; as in the *Phys. Psych.* Lecture 12 of the old edition, on the structure and function of the sense-organs, has not been incorporated in the new.

The following six lectures have been less changed. They deal with reflex-action, muscle-sensations, the perception of space, and visual ideas. The phrase 'sensation of innervation' has not been introduced; and the theory of localisation in space is simplified by the omission, for expository purposes, of all the sensations which attend bodily movement, other than the muscle-sensations. Very little alteration, in spite of criticism, has been found necessary in the pages which treat of the influence of eye-movement on spatial vision. Like most other psychologists, Prof. Wundt gives the predominant place in the consciousness of the congenitally blind to the sense of touch. It is doubtful if hearing is not in reality more, or equally important. Lectures 18-20, inclusive, of the old edition (self-consciousness, consciousness, idea) have been omitted; and lecture 17 (metaphysic of space) greatly curtailed.

The chapter on the feelings has to a large extent been rewritten. It is, perhaps, regrettable that the term *Gefühlssinn* has been retained here as in the *Phys. Psych.*; it is likely to cause confusion. The earlier position that feeling cannot be an original mental process, since it is contained in the sensation, is modified rather farther in the direction of independence than is the case in the *Phys. Psych.* The existence of mixed feelings is in the new book in so far admitted, as there can occur, in cases of rapid succession of divergent feelings, an overlapping of these in consciousness, whereby arises a new 'total' feeling, different from the original constituents, but partaking of their natures.

Lectures 15-24 are in their present form new, though they correspond in some part to the omitted series 18-20, 23-29 of the first edition. The first two deal with the development of will and with consciousness. In the latter, apperception and attention are marked off from one another. "Apperception and attention are related to one another in such a way that the former term covers the objective change occurring in the ideational content, while the latter denotes the subjective sensations [muscular] and feelings which attend or precede this change." This terminology is different from that of the *Phys. Psych.*, and will, I fear, set another stumbling-block in the way of students of the apperception-theory. For the rest, the accounts of passive and active apperception, and of attention and will follow broadly the lines of the *Phys. Psych.* The eighteenth lecture deals with the time-relations of mental processes; the two succeeding with the association of ideas, simultaneous and successive. The analysis of the forms of association, contiguity and similarity; and the treatment of its simplest cases, cognition and recognition; stand on the basis of the recent *Phil. Stud.* article, "Bemerkungen zur Associations-

lehre". Prof. Scripture's indirect association is accepted as furnishing the explanation of Herbart's *frei steigende Vorstellungen*.

Over against the associative are ranged the apperceptive combinations of ideas: collective ideas and concepts, the logical judgment, the train of constructive imagination. The intellectual functions do not receive here the comparatively full treatment of the first edition, being relegated to the spheres of logic and æsthetics. Paragraphs on mental disease are introduced. It is characterised, in the first instance, by the predominance of associative as compared with apperceptive thinking; secondly, by incapacity for concentration of the attention. Dreams, somnambulism and hypnotic phenomena are next treated of; the exposition of the latter reproducing in substance parts of the article "Hypnotismus und Suggestion" in the *Phil. Studien*.

Lectures 23 and 24 deal with animal psychology. Prof. Wundt is of the opinion that the animal consciousness has not advanced beyond the associative stage; and many of Dr. Romanes' most telling anecdotes are ruthlessly analysed from this standpoint. In the earlier edition, the higher animals were credited with a more complete psychical development (*cf.* i. 459). The difficulty of the present position is the spring from association to apperceptive combination. It is, no doubt, true that every child makes this spring (p. 397); but its determining cause is hard to see. The animal fits his environment exactly; and we ourselves take much trouble to reduce apperception to association. The author would say, as in the *Phys. Psych.*, that the germ of the apperceptional activity is given in the most primitive impulse, but that it only assumes its definite character in the human consciousness.

The five following chapters correspond more or less closely to six of the old lectures (31, 51 and 52, 42, 55 and 56). The first three treat of the emotions and their expression, impulsive and voluntary action, and instinct. A whole lecture is devoted to a consideration of human instincts, these furnishing the foundation for the erection of a theory of instinct in general. The social instincts of animals are then considered. Lastly, the twenty-ninth lecture takes volition for its subject. The discussion of the problem of the causality of will is very little altered from the previous edition.

The final lecture has been completely rewritten. Its two chief topics are the law of psychophysical parallelism, and the question of the nature of mind. The style is lighter than that of the concluding chapter of the *Phys. Psych.*, and the ultimate problem handled from a standpoint more akin to that of the *System der Philosophie*.

The book is essentially a book for beginners in psychology, or for the educated public who wish to obtain some knowledge of experimental psychology, without the trouble of mastering its technicalities or of experimenting for themselves. For the psychologist it has the further value, which I emphasised at the outset. It would be impertinent in a reviewer to 'recommend' a book of Prof. Wundt's on his own science: one can, however, express the hope that the *Lectures*, in their new form, will find a large audience in Germany, and before long be translated for the benefit of the world of English-speaking students.

Über Sittliche Dispositionen. Von Dr. Anton Oelzelt-Newin, Privatdocent an der Universität in Bern. Graz: Leuschnen & Lubensky, 1892. Pp. 92.

This is an interesting study of the inheritable elements in moral character, written from a sober and critical standpoint. The inheritable

'moral' tendencies are, in Dr. Oelzelt-Newin's opinion, only six, *viz.*, predispositions to the six emotions—fear, anger, sympathy, love, shame, pride. Certain inheritable intellectual and volitional tendencies, as also certain inheritable physical conditions, enter as factors in moral character, but the term, as well as the present inquiry, must be limited to the above tendencies to emotion, as more primordial and essential elements. The application of the term even to these seems to us misplaced and to obscure the position taken up, *viz.*, that moral character and tendencies to moral actions, which are essentially complex, are not inheritable, but are developed by 'education' (environment, &c.), out of simpler elements, which are inheritable, and of which the most important are the above six tendencies to emotion.

The method adopted in this inquiry is that of observation and analysis. Two general arguments drawn from the inheritability of parallel bodily phenomena and of 'moral insanity,' which cannot be sharply divided off from extreme cases of normal tendencies, are advanced, and then each of the six emotions is examined in turn, these general arguments applied to them and other special arguments (differences in animals and children under similar conditions, the inefficacy of education, &c.) adduced. The alternative method of statistics Dr. Oelzelt-Newin criticises as worthless unless adequately supplemented by the analytical, and in an examination of the inquiries of Mr. Francis Galton and of De Candolle he shows very clearly the difficulty of obtaining results at once adequately analysed and of sufficient range. The most valuable results as yet obtained by this method are those yielded by "Psychiatrie".

It is in such criticism as this that the chief value of the treatise lies. The whole question of heredity might with advantage be treated with the same soberness, and the same corrective of analysis and observation applied to the too readily accredited results in other provinces than the 'moral,' and the value of the work before us would be enhanced if it were made a chapter in such larger inquiry. Whether the method of analysis and observation can yield positive results of any great value in this field, in the absence of any psychological Methuselah capable of observing succeeding generations, is a question open to doubt, at any rate so far as the higher psychological products are concerned, since in their case we cannot argue from analogy with comparatively short-lived animals; but undoubtedly Dr. Oelzelt-Newin is in the right in claiming for it a larger place than it commonly occupies.

Philosophie der Arithmetik: psychologische und logische Untersuchunger. Von Dr. E. G. Husserl, Privat-docent der Philosophie an der Universität zu Halle. Erster Band. Halle Saale: C. E. M. Pfeffer (Robert Stricker), 1891. Pp. xvi., 324.

We have here the first volume of an important work likely to be of especial interest to those who are concerned with the Theory of Knowledge. We hope to furnish a more extended notice of it when the second volume, which the author promises shortly, comes to hand. The whole work is to consist of four parts (of these the present volume contains the first two): (1) in the main psychological, the analysis of the concepts of plurality, unity, and number apart from symbolic forms of representation; (2) an examination of these symbolic forms and of the effect that our dependence upon symbols has in shaping the problems and methods of numerical arithmetic; (3) the logical investigation of arithmetical algorithmic, and, in particular, of the results of inverse operations—negative, imaginary, fractional and irrational numbers; and

(4) the nature and scope of universal arithmetic. In an appendix to this volume the author also hopes to fill up a gap in our existing logic by treating generally of the logic of symbolic methods or "Semiotic". The work is thus obviously one that can be dealt with critically only when it is complete.

Received also :—

H. Spencer, *Principles of Ethics.* Vol. I. London: Williams & Norgate, 1892. Pp. xii., 572.

E. B. Tylor, *Primitive Culture.* London: Murray, 1891. 2 Vols. Pp. xii., 502, and viii., 471.

C. Lombroso, *Les Applications de L'Anthropologie criminelle.* Paris: F. Alcan, 1892. Pp. 224.

G. Hirth, *Physiologie de l'Art. Traduit de l'Allemand et précédé d'une introduction par Lucien Arréat.* Paris: F. Alcan, 1892. Pp. lix., 250.

Dr. J. Pioger, *Le Monde physique.* Paris: F. Alcan, 1892. Pp. 174.

G. de Greef, *La Constituante et le Régime représentatif.* Bruxelles: J. Lebègue & Cie, 1892. Pp. 338.

L'Abbé Maurice de Baets, *Les Bases de la Morale et du Droit.* Paris: F. Alcan, 1892. Pp. xxiii., 384.

B. Bourdon, *L'Expression des Emotions et des Tendances dans le Langage.* Paris: F. Alcan, 1892. Pp. 374.

Dr. E. Rolfes, *Die Aristotelische Auffassung vom Verhältnisse Gottes zur Welt und zum Menschen.* Berlin: Mayer & Müller, 1892. Pp. 202.

J. Eitle, *Grundriss der Philosophie.* Freiburg: J. C. B. Mohr, 1892. Pp. xvi., 304.

Alfr. Lehmann, *Die Hauptgesetze des menschlichen Gefühlslebens.* Leipzig: O. R. Reisland, 1892. Pp. 356.

Philosophische Gesellschaft zu Berlin, *Acht Abhandlungen.* Herrn Professer K. L. Michelet zum 90 Geburtstag als Festgruss dargereicht. Leipzig: Verlag von C. E. M. Pfeffer, 1892. Pp. 102.

VIII.—PHILOSOPHICAL PERIODICALS.

The Philosophical Review.—Vol. i. No. 4. Dr. J. H. Hyslop—Inhibition and the Freedom of the Will. ["It is not the presence or absence of a nexus between motive and volition that determines the question (of the freedom of the will), but the source of the agency acting as a motive. If that agency be ideational the will is free, and in order to reach that stage of complete freedom involved in the dominant influence of ideational centres inhibition must break the natural connexion strengthened by habit, between sensations and emotions and volitional action."] Mary W. Calkins—A Suggested Classification of Cases of Association. [The best article in the number. The leading division is between desistent and persistent associations. In the case of the desistent, no part of the suggesting "object of consciousness" persists along with the object suggested. The persistent associations are so named because in their case the "earlier object" persists and combines with the later. Both these classes are subdivided under the heads "total" and "partial" association, according as the whole or only a part of the earlier object is operative in calling up the later. The paper is throughout thoughtful and suggestive. The old associationism is criticised from the standpoint of James. It may be urged that the criticism shows an imperfect recognition of the underlying facts which give vitality to the theory assailed. The account of desistent association does not seem quite satisfactory. It is assumed that the previous object passes out of consciousness before the succeeding one arises. But it seems that, in most cases at least, what we are justified in saying is that the emergence of the suggested object involves the gradual obscuration and final extrusion of that which suggests it.] Dr. H. Nichols—The Origin of Pleasure and Pain. [The thesis maintained is that all pleasure and pain in the widest application of these terms depends on the stimulation of specific pleasure-nerves and pain-nerves. The argument seems to be based on a misconception of the results obtained by Goldscheider in his experiments on the sensibility of the skin. It is assumed that the pain-points are the only parts of the skin which can be painfully stimulated. But this is only true if we use the word pain in a very restricted sense. Goldscheider himself admits that temperature sensations may be highly disagreeable in the same way as a bad smell or a dazzling light is so.] Hiram M. Stanley—On Primitive Consciousness. [The primitive consciousness is pain, "not pain in any particular kind, but wholly undifferentiated bare pain". The line of argument by which the writer supports his position is far from clear, and it is certainly not cogent. We are told that a "bright colour gives pleasure before we see it, and this pleasure incites to the seeing it". But no reasons are given for this very paradoxical statement.] Reviews of books, &c.

Part xxi. of the Proceedings of the Society for Physical Research (June, 1892) is entirely occupied by a record of Dr. Richard Hodgson's "Observations on certain phenomena of trance" exhibited by Mrs. Piper—a lady who appears to go off into a trance almost at will, and in that trance to talk volubly, with characteristics quite different from her ordinary manner and voice, on details concerning which she has had no

information given her. Prolonged investigations have more and more strengthened Dr. Hodgson in the conviction "that Mrs. Piper's trance is a genuine abnormal state, and that the normal waking Mrs. Piper has no direct knowledge whatever of the sayings and doings of her trance personality". He further agrees with Prof. Lodge in regarding it as beyond doubt that much of the information she possesses in the trance state is acquired by some means other than those known to physical science: and he is convinced that it cannot be accounted for entirely by the hypothesis of thought-transference from other persons present during the trance. His investigation is being continued, and further results will be given in a later article.

In part xxii. of the *Proceedings*, a different aspect of Dr. Hodgson's work is present: he makes an elaborate attempt to convince Mr. Alfred Russel Wallace of the validity of the results of some careful experiments, made in conjunction with Dr. Hodgson by the late Mr. S. J. Davey, an amateur conjurer, on the possibilities of mal-observation and lapse of memory in *bonâ-fide* witnesses of marvellous phenomena—see *Proceedings* of the S. P. R., vol. iv. pp. 381-487. Both this article and the previous record of experiments contain useful instruction, not merely for the very limited number of educated persons who take "mediumistic" performances seriously, but for all who are interested in examining closely the sources of modern superstitions. Mr. Myers furnishes two more chapters on the "Subliminal Consciousness"—one on "The Mechanism of Genius," the other on "Hypermnesic Dreams". The latter gives several striking instances of the operation in dreams of what appears to be memory of unconscious perceptions.

The International Journal of Ethics opens with a suggestive article by Mr. Alexander on "Natural Selection in Morals"; the title, however, is perhaps misleading, since what Mr. Alexander describes is the process of spreading new moral ideas by persuasion and education, and not the tendency of certain moral ideas and sentiments to be preserved through the success, in the struggle for existence, of individuals and societies in which they are found. Mr. W. L. Sheldon makes a frank and attractive attempt to answer the difficult question "What attitude should the pulpit take to the labour problem?" Mr. Charles Zeublin, in a paper on the "Ethics of the Jewish Question," aims at showing that the Jew has been the "victim of environment," that his objectionable characteristics are due to seclusion and persecution, and that "with opportunity he can change". We must make room for him, and prevent his resorting to his past gregarious habits, by legislation, directed not against Jews in particular, but "against all people who attempt to collect in dense colonies". Mr. W. R. Thayer writes on "Machiavelli's Prince," arguing that during the past three centuries and a half "the attitude of states towards each other has remained Machiavellian;—which is true so far as regards the practical acceptance of the principle that the end of national self-preservation justifies any means, but not true in the sense that the means recommended by Machiavelli have been commonly accepted as well adapted to the end. Mr. Thayer's remedy —"to abolish the old falsehood that there is one standard of right for the single citizen and another for all the citizens"—seems crudely conceived, since it ignores the variations in the standard of right that common-sense would admit for individuals, if they were placed in social relations similar to existing international relations. Prof. Carneri writes hostilely of the "founding of a new religion"—a movement which in England is hardly vigorous enough to challenge attack. Mr. Frank

Chapman Sharp attempts one more "Analysis of the idea of obligation". The reviews are carefully written and interesting.

BRAIN.—Pt. lviii. A. Miles, M.D.—On the Mechanism of Brain Injuries. ["Concussion of the brain" is the result of a temporary anæmia of that organ, and this anæmia is the reflex result of stimulation of the restiform bodies, and perhaps other important centres in the region of the bulb, by the impact of the wave of cerebro-spinal fluid, which the blow sets up. The mechanism of this process is carefully discussed.] E. Dupuy, M.D.—The Rolandic area Cortex. [In the grey matter of the cerebro-spinal system there is no specified localisation of functions in the sense understood by the majority of physiologists and all physicians. "The grey tube element is neither motor nor sensory." The writer confronts the orthodox with some puzzling facts and arguments.] F. W. Moll, M.D.—Ascending Degenerations resulting from Lesions of the Spinal Cord in monkeys. R. T. Williamson—The Changes in the Optic Tracts and Chiasma, in a case of unilateral Optic Atrophy. E. Goodall, M.D.—On certain microscopical changes in the nerves of the limbs in cases of general paralysis of the insane. Sanger Brown, M.D.—On hereditary alaxy, with a series of twenty-one cases. The reviews include notices by E. B. Titchener of James' *Principles of Psychology*, Sully's *Human Mind*, Baldwin's *Handbook of Psychology*, and Waller's *Introduction to Human Physiology*.

REVUE PHILOSOPHIQUE (17e Année, No. 6).—A. Fouillée—Existence et développement de la volonté. I. Existence de la volonté. [By the term "will" M. Fouillée proposes, as he somewhat loosely puts it, to express "ce fait, que, dans tout état de conscience, même le plus élémentaire, la phase sensitive est inséparable d'une phase émotionelle et celle-ci d'une phase appétitive ou réactive". More precisely, he aims in the present paper at establishing the existence of this third, the reactive, phase, though treating it in close connexion with his general conception of consciousness as a processus of these terms (discernment, well-being or discomfort, and reaction), and of his doctrine of 'idées-forces'. His special arguments (the appeal to the introspective analysis of the antecedents of movements, &c.) are however independent of the general theory, and seem sufficient to establish the fact of 'reaction'. It is difficult however to gather precisely what and how much M. Fouillée understands by 'reaction'. He calls it 'appetition,' but seems to include in, or confound with, it facts more commonly brought under 'attention'. Nor does his condemnation of "les interminables discussions psychologiques sur l'existence on la non-existence d'une 'activité' quelconque, soit dans l'attention et l'apperception, soit dans la volition proprement dite," as coming "de ce qu'on raisonne toujours dans l'hypothèse de facultés distinctes," throw much light on his own position with regard to 'appetition'. The general conception of "idées-forces," though interesting as a recognition of the unity—the solidarity—of consciousness, seems very inadequate as a psychological reconstruction. Physiologically, M. Fouillée holds that there are no specifically motor centres, but that the appetitive reaction is, on the physiological side, a restitution of movement transformed by the organism, not a passive reception of external impressions, while his philosophical position is that "physical energy is the external expression of psychical energy, that is, of the will, which is omnipresent and constitutive of reality itself".] Lalande —Sur quelques idées du baron d'Holbach. [A paper exhibiting the close affinity of d'Holbach's views and methods with those of Herbert Spencer.

In both systems of philosophy there is the same fundamental idea of Nature, the same theory of Knowledge, the same naturalistic method, and a similar system of Ethics is given the same position among the sciences. The difference due to the introduction of the theory of evolution is great in form rather than in reality, and merely gives a little more 'vraisemblance' to the same conception of the world and of man.] G. Sorel—Essai sur la philosophie de Proudhon. [Treats of Proudhon's theory of Justice and of Contradictions, and seeks to explain the manner in which he based economics upon psychology. The psychological basis, when reached, does not seem to us a very definite one.] Burke Delabarre—(Laboratoire de psychologie physiologique). L'influence de l'attention sur les mouvements respiratoires. [Experiments with results leading to the conclusion, "que toute modification dans l'attention produit des modifications dans la rapidité et dans la profondeur de la respiration; et que ces modifications sont plus considérables à mesure que l'effort de l'attention augmente," but that the changes are less considerable and even imperceptible in the case of persons whose normal respiration is very rapid, for the reason that their normal respiration approximates to the type necessary to the maintenance of attention.] A. Binet—La perception de la durée dans les réactions simples. [Experiments on the perception and estimation of variations in length of reaction-time, undertaken with the object of throwing light on the relations between the conscious and unconscious. M. Binet finds that while in general variations of ·03 or ·04 of a second can be accurately judged, below that limit variations are by some persons never accurately perceived, but by others are perceived though with increasing inaccuracy (greater number of false judgments) as the variations become smaller. From these results he concludes that with certain persons there is no 'threshold' of consciousness, no fixed limit, separating the conscious from the unconscious, but 'degrees'.]—No. 6. G. Fonsegrive—L'inconnaissable dans la philosophie moderne. [A not very convincing attempt to show that the principles of the Kantian critique, so far from proving the metaphysical objects (self, the world, God) to be transcendent and unknowable, really involve the knowledge of these objects. M. Fonsegrive argues that while Kant refuted empiricism, and consequently positivism, by pointing out the existence of universal and necessary laws, he did not thereby establish the truth of *a priorism*, because there remains a third alternative, *viz.*, to attribute an objective value to these laws, to conceive them as the laws of real existences independent of, though perceived by, the mind. This alternative M. Fonsegrive adopts on the ground that "l'experience même de la conscience dément l'hypothèse idealiste et ne peut s'accorder avec elle".] J. Combarieu—La musique d'après Herbert Spencer. [Criticises Spencer's theory of the origin of music as an undue simplification of facts though true as far as it goes. The most important element in music is 'la pensée musicale,' and the power of music rests in the close union between this idealistic moment and the realistic moment, *viz.*, the imitation and expression of the real world.] G. Sorel—Essai sur la philosophie de Proudhon [concluded from the June number]. Analyses et comptes rendues, &c.

Zeitschr. f. Psych. u. Phys. d. Sinnesorgane.—Bd. iii., Heft 5. F. Brentano—Ueber ein optisches Paradoxon. [A consideration of the arrow-head and -feather illusion, which the writer strangely regards as new. This and cognate illusions are explained by the law of the overestimation of small and under-estimation of large angles, as against theories of eye-movement, &c.] A. Szili—"Flatternde Herzen".

[Helmholtz had referred these phenomena to the difference in the latency-times of colour-sensations. The author regards the retinal excitation as compounded of colour-contrast and the projection of a negative after-image. The direct visual perception is impeded in two ways : by the retardation of the retinal impression, due to diminution of the stimulus-intensity ; and by the continuance of the subjective retinal excitation, due to the predominating qualitative stimulus.] F. Hitschmann—Ueber Begründung einer Blindenpsychologie von einem Blinden. [A most valuable paper. The writer states emphatically that the most important sense for the blind is that of hearing, while touch plays a very subordinate part. It is pointed out that in asserting touch as principal factor in the construction of the external world of the blind, many psychologists fall into the error of visualising the result of this construction. The idea of the plastic is, on the contrary, normally foreign to the blind consciousness.] O. Schwarz—Bemerkungen über die von Lipps und Cornelius besprochene Nachbilderscheinung. [The explanations of Lipps (Bd. i., 60 ff.) and Cornelius (Bd. ii., 164 ff.) are rejected, and the two parts of the after-image referred to two differently localised sensations of one and the same retinal excitation. This seems, certainly, the more correct view, though he has hardly done Prof. Lipps justice, having misunderstood him on several points.] Litteraturbericht. [A useful paper by Edinger—Ueber die Leistungen auf dem Gebiete der Anatomie des Centralnervensystems im Laufe des Jahres, 1890.]—Bd. iii., Heft 6. M. Tscherning—Beiträge zur Dioptrik des Auges. [1. The useful, harmful, and lost light ; and the intensity of the corresponding images in the eye as compared with dioptric instruments and with a simple lens. 2. Theory of the origin of the optical images in the eye. 3. Description and use of the ophthalmophakometer. 4. Results of observations : cornea, pupil, lens. 5. Summary of results and testing of measurements. 6. A hitherto undescribed change in the lens during accommodation : towards the end of accommodation the lens is displaced in a downward direction.] Th. Lipps—Optische Streitfragen. [1. Somewhat heated remarks on misunderstandings of the author's position (Bd. i., 60 ff.) in the explanation given by Dr. Schwarz (Bd. iii., 398 ff.) of the after-image phenomenon, also previously discussed by Prof. Cornelius (Bd. ii., 164 ff.). 2. A good criticism of Prof. Brentano's article, Bd. iii., 349 ff. For the latter's explanation the writer will substitute that given by himself in his "Æsthetische Faktoren der Raumanschauung". The danger of attempted explanations of isolated cases or groups of optical illusions is rightly emphasised.] Litteraturbericht. H. v. Helmholtz—Berichtigung.

Archiv für Geschichte der Philosophie.—Bd. v., Heft 4. E. Zeller —Miscellanea. [Seven more or less disconnected notes on dubious passages relating (mainly) to earlier Greek thinkers.] V. Brochard—Sur la Logique des Stoïciens. [A clear exposition and noteworthy vindication of the importance of the Stoic Logic, as a more consistently nominalistic doctrine than even Mill (who evidently had not studied it) was able to work out.] P. Tannery—Encore trois lettres inédites de Descartes à Mersenne. [Recovered by the library of the Institute from the Libri theft ; one of them gives evidence of highly developed experimental tact in Descartes.] W. Dilthey—Das natürliche system der Geisteswissenschaften im siebzehntem Jahrhundert. [The author, having completed his novel and striking account of European thought in the fifteenth and sixteenth centuries, here proceeds to deal with the obscurer origins of the system of Modern Naturalism which arose upon the failure

of the theological philosophies. The origins are here traced in all the foremost European countries, but chiefly in Holland, where Coornhert began from about the middle of the sixteenth century the work of compounding the strife of religious confessions and sects. The Stoic factor in the development of modern thought falls next to be treated.] A. Döring—Wandlungen in der pythagoreischen Lehre. Jahresberichte (E. Zeller, C. Baeumker).

Vierteljahrschrift für wissenschaftliche Philosophie.—Bd. xvi., Heft 3. J. von Kries—Ueber Real—und Beziehungs-Urtheile. [The writer recognises the fundamental importance of Riehl's distinction between judgments and conceptual propositions. But he prefers to apply the term judgment to both classes, distinguishing them as real judgments and judgments of relation. He subdivides both classes according to a plan of his own. The most important part of the article deals with the nature of mathematical judgments, maintaining their *a priori* character as against Helmholtz and those who think with him. He argues convincingly for the ultimacy of the conceptions of equality and inequality in space and time and their logical priority to all physical measurement.] A. Voigt—What is Logik? [A vindication of symbolic Logic as against the strictures of Husserl in the Göttingensche *Gelehrte Anzeigen* for 1890. It is maintained that Symbolic Logic deals with the same problems as "Philosophical Logic". But Philosophical Logic is apparently identified with Syllogistic.] R. Ulassak—Zur Psychologie der Landschaft. [The enjoyment of landscape scenery is carefully analysed.] M. Dessoir—Nic. Tetens Stellung in der Geschichte der Philosophie. [Tetens is an antimaterialistic Empirical philosopher with critical tendencies. He belongs neither to the Wolfians nor to the Eclectics nor to the Popularisers. The critical element in his thought separates him from his contemporaries, Tiedemann, Zuckert and Beausobre. The article is especially interesting in its presentation of Teten's position as a pioneer of modern empirical and even experimental psychology.] Anzeigen, &c.

Philosophische Monatshefte.—Bd. xxviii., Heft 3 u. 4. A. Rosinski—Die Wirklichkeit als Phänomen des Geistes. [An attack on the doctrine of the Ding an sich.] Long reviews of R. Eucken's book, *Die Einheit des Geisteslebens im Bewusstsein und That der Menschheit*, by P. Natorp, and of Jules Thomas' *Principes de Philosophie Morale*.—Heft 5 u. 6. A. Rosinski—Die Wirklichkeit als Phänomen des Geistes. [This second and concluding article continues in the same strain. The writer seems guilty of a confusion between content of consciousness and object of thought.] R. F. Kaindl—Wesen und Bedeutung der Impersonalien. [All so-called impersonal sentences have a subject which is unexpressed, though this subject is not the agent concerned in the action indicated by the verb. They are appellative judgments (Benennungsurtheile). In all of them a concrete reality, which is the tacitly implied subject, is designated by a name expressing a general concept.] E. Kühnemann—Zur Geschichte und zum Problem der Æsthetik. [Deals with H. von Stein's *Die Entstehung der neueren Æsthetik*.] The reviews include a long and appreciative notice of Prof. Caird's *Critical Philosophy of Immanuel Kant*, by E. König.—Heft 7 u. 8. M. Offner—Ueber die Grundformen der Vorstellungsverbindung. [A good article, treating mainly of the reduction of so-called association by similarity to association by contiguity. The case for this reduction is stated with convincing clearness and force, and the arguments urged on the other

side by Höffding are subjected to a searching criticism.] E. Kühnemann —Zur Geschichte und zum Problem der Æsthetik. [Discusses H. Cohen's *Kant's Begründung der Æsthetik.*] Reviews. Litteraturbericht, &c.

Rivista Italiana di Filosofia.—Anno vii., vol. ii. (July and August). G. Marchesini—La Dottrina metafisico-psicologia di Andrea Cesalpino. [An examination of Cesalpino's philosophy, based in particular upon the Questioni peripatetiche, iii., vi., vii. and viii., *viz.*, that the first moving cause is speculative, not active, intelligence; that intelligence is one, namely, God; that human intelligence multiplies itself according to the number of human beings; that the souls of men are immortal. The writer shows that the main, though not the sole, tendency in Cesalpino is to pantheism, and concludes that "in the dispute between the Averroists and Alexandrians . . . Cesalpino proffered a solution, the terms of which are perhaps inconsistent with the proper essence of the doctrine, but not so much so to prevent its being a step towards the emancipation of Aristotelian thought from the speculations of the Scholastics".] N. R. D'Alfonso—Note psichologiche al Macbeth di Shakspeare. [A study of Macbeth and Lady Macbeth as pathological subjects.] F. Cicchitti-Suriani—Del divino nell'educazione e dell'insegnamento religioso. [A paper advocating the teaching in state schools of Christianity, not in its doctrinal, but in its ethical aspect.] Bibliographia, &c.

IX.—NOTES.

HELEN KELLER.

Readers will not have forgotten the marvellous blind deaf-mute child, Helen Keller, whose case has already twice been reported in MIND (xiii. 314, xiv. 305). After three years' interval, the progress of her education is again officially recorded in the *Sixtieth Annual Report* (1892) of the Perkins Institution for the Blind in Boston, Mass.; and the information is supplemented in various important respects by a somewhat later memoir, from the Volta Bureau of Washington, entitled *Helen Keller: Souvenir of the First Annual Meeting of the American Association to promote the Teaching of Speech to the Deaf* (2nd ed.). Among much else of profound psychological interest to be noted in the record of the last three years (till the middle of 1891), one fact stands out of prime import, that the deaf child, though blind, is no longer dumb—can speak with her lips and with the lips can be spoken to.

The achievement is so remarkable as to justify liberal quotation here from the first-hand reports. Helen, be it remembered, was born as late as June, 1880 (though she is now of a stature, 5 ft. 2 in., and weight, 122 lbs., uncommon in a girl of twelve); her regular education upon the general lines of Dr. Howe's famous treatment of Laura Bridgman did not begin till close on the end of her seventh year. Her devoted teacher, Miss Sullivan, gives the following account of the new step forward:—

"It was just three years from the day when Helen became conscious that she could communicate her physical wants, her thoughts, and her impressions through the arbitrary language of the fingers, to the time when she received her first lesson in the more natural and universal instrument of human intercourse—oral language. Previous to March, 1890, no effort whatever had been made to teach her to speak, and her only utterances were instinctive, like those of a young child. . . . By means of the manual language she had acquired a comprehensive vocabulary, which enabled her to converse freely, read intelligently, and write good idiomatic English. Nevertheless, the impulse to utter audible sounds was strong within her, and the constant efforts which I made to repress this instinctive tendency were of no avail. It did not occur to me that my pupil might possess unusual aptitude for learning articulation. I knew that Laura Bridgman had shown the same intuitive desire to produce sounds, and had even learned to pronounce a few simple words, which she took great delight in using, and I did not doubt that Helen could accomplish as much as this. I thought, however, that the advantage she would derive would not repay her for the time and labour that such an experiment would cost. . . .

"When she was stricken down with the illness which resulted in her loss of sight and hearing, at the age of nineteen months, she was fast learning to talk. The unmeaning babblings of the infant were becoming day by day conscious and voluntary signs of what she felt and thought. But the disease checked her progress in the acquisition of oral language, and when her physical strength returned it was found that she had ceased to speak intelligently because she could no longer hear a sound. She continued to exercise her vocal organs mechanically, as ordinary children do. Her cries and laughter and the tones of her voice as she

pronounced many word-elements were perfectly natural, but the child evidently attached no significance to them, and with one exception they were produced, not with any intention of communicating with those around her, but from the sheer necessity of exercising her innate, organic, and hereditary faculty of expression. She always attached a meaning to the word *water*, which was one of the first sounds her baby-lips learned to form, and it was the only word which she continued to articulate after she lost her hearing. Her pronunciation of this gradually became indistinct, and when I first knew her it was nothing more than a peculiar noise Nevertheless, it was the only sign she ever made for water, and not until she had learned to spell the word with her fingers did she forget the spoken symbol. The word *water* and the gesture which corresponds to the word *good-bye* seem to have been all that the child remembered of the natural and acquired signs with which she had been familiar before her illness. . . .

"At the time when I became her teacher she had made for herself upwards of sixty signs, all of which were more or less ingenious, and were readily understood by those who knew her. Whenever she wished for anything very much she would gesticulate in a very expressive manner. Failing to make herself understood, she would become violent and often uncontrollable. . . .

"For some time after Helen and I became constant companions we had no adequate means of communication, and the child was often thrown upon her own resources for amusement. She would sit beside me after a lesson, or wander restlessly about the house making strange though rarely unpleasant sounds. When sitting she would make noises, keeping one hand on her throat, while the fingers of the other hand noted the movements of her lips. Occasionally she would break out into a merry laugh at some passing fancy, and then she would reach out and touch the mouth of any one who happened to be near her to see if she or he were laughing also. If she detected no smile she would gesticulate excitedly, trying to convey her thought ; but, if she failed to make her companion laugh, she would sit very still for a few moments, with an expression so troubled and disappointed that I shall never forget it. She was pleased with anything that made a noise. She liked to feel the cat purr ; and, if by chance she felt a dog in the act of barking, she would show great pleasure. She always liked to stand by the piano when some one was playing and singing. She would keep one hand on the singer's mouth, while the other rested on the piano, and she derived so much enjoyment from a performance of this sort that she would stand in the position described as long as any one would sing to her ; and afterwards she would make a continuous sound which she called singing. The only words she had learned to pronounce with any degree of distinctness previous to March, 1890, were *papa*, *mamma*, *baby*, *sister*. These words she had caught without instruction from the lips of friends. It will be seen that they contain three vowel and six consonant elements, and they formed the foundation for her first real lesson in speaking. During the latter part of the winter of 1889-90 she became gradually conscious of the fact that her means of intercourse with others were different from those employed by her little friends and playmates who were only blind ; and one day her thoughts on the subject found expression in the following questions : 'How do the girls know what to say with their mouths? Why do you not teach me to talk like them? Do deaf children ever learn to speak?' I explained to her that there was a school in Boston where deaf children were taught to speak, but that they could see their teacher's mouth, and learn partly in that way. Here she

interrupted me to say that she was sure she could *feel* my mouth very well.

"A short time after this conversation a lady came to see Helen and told her about little Ragnhild Kaata, a deaf and blind child who had been taught to speak and to understand by touching her teacher's lips what he said to her. Helen's joy over this good news can be better imagined than described. 'I am so delighted,' she said, 'for now I know that I shall learn to speak too.' I promised, if she would be patient, that I would take her to see a kind lady who knew all about teaching the deaf, and who would know whether it would be possible or not for her to learn to speak. 'Oh, yes, I can learn,' was her eager reply, 'I know I can, because Ragnhild has learned to speak.'

"She did not mention the subject again that day; but it was evident she thought of little else, and that night she was not able to sleep. She began immediately to make sounds which she called speaking; and I saw the necessity of correct instruction, since her heart was set upon learning to talk. Accordingly, I went with her early in March to ask the advice and assistance of Miss Sarah Fuller of the Horace Mann School. Miss Fuller was delighted with the child's enthusiasm and earnestness and immediately began to teach her to speak. . . .

"She was not content to be drilled in single sounds or meaningless combinations of letters. She was impatient to pronounce words and form sentences. The length of the word or the difficulty of the arrangement of the letters never seemed to discourage her. When she had been talking for less than a week, she met her friend Mr. Rodocanachi, and immediately began to struggle with the pronunciation of his name; nor would she give it up until she was able to articulate the word distinctly. Her interest never diminished for a moment; and in her eagerness to overcome the difficulties which beset her on all sides, she taxed her powers to the utmost. . . . She was in a constant state of mental excitement, which finally affected her health seriously. In less than a month, she was able to converse intelligently in oral language. . . .

"She prefers to speak rather than to spell with her fingers, and is very much pleased when told by strangers that they understand her readily. She is now learning to read by touching our lips what we say to her, and is almost as quick at catching the meaning of words and phrases as we utter them as she is at forming them for herself. She can even read in this way words in foreign languages with which she is not acquainted. She understands the necessity of close observation, and carefully notes the slightest vibrations resulting from articulation. Every day she makes fresh progress in the art of speaking."

Next may be given this letter from Helen to Miss Fuller on 3rd April, 1890, only eight days after the oral instruction began:—

"My heart is full of joy this beautiful morning, because I have learned to speak many new words, and I can make a few sentences. Last evening I went out in the yard and spoke to the moon. I said, 'O moon, come to me!' Do you think the lovely moon was glad that I could speak to her? How glad my mother will be! I can hardly wait for June to come, I am so eager to speak to her and to my precious little sister. Mildred could not understand me when I spoke with my fingers, but now she will sit in my lap and I will tell her many things to please her, and we shall be so happy together. Are you very, very happy because you can make so many people happy? I think you are very kind and patient, and I love you very dearly. My teacher told me Tuesday that you wanted to know how I came to wish to talk with my mouth.

I will tell you all about it, for I remember my thoughts perfectly. When I was a very little child I used to sit in my mother's lap nearly all the time, because I was very timid, and did not like to be left by myself [*i.e.*, after her illness]. And I would keep my little hand on her face all the while, because it amused me to feel her face and lips move when she talked with people. I did not know then what she was doing, for I was quite ignorant of all things. Then when I was older I learned to play with my nurse and the little negro children, and I noticed that they kept moving their lips just like my mother, so I moved mine too, but sometimes it made me angry and I would hold my playmates' mouths very hard. I did not know then that it was very naughty to do so. After a long time my dear teacher came to me, and taught me to communicate with my fingers and I was satisfied and happy. But when I came to school in Boston I met some deaf people who talked with their mouths like all other people, and one day a lady who had been to Norway came to see me, and told me of a blind and deaf girl she had seen in that far-away land who had been taught to speak and understand others when they spoke to her. This good and happy news delighted me exceedingly, for then I was sure that I should learn also. I tried to make sounds like my little playmates, but teacher told me that the voice was very delicate and sensitive and that it would injure it to make incorrect sounds, and promised to take me to see a kind and wise lady who would teach me rightly. That lady was yourself. Now I am as happy as the little birds, because I can speak, and perhaps I shall sing too. All of my friends will be so surprised and glad."

Miss Fuller's account of the method of instruction is as follows :—

"In June, 1888, Helen A. Keller, accompanied by her mother, Mr. Anagnos and her teacher, Miss Sullivan, paid a visit to the Horace Mann School. As she went from class to class, her interest in the children and her ready use of English suggested to me that she could be taught to speak. At that time it was thought unwise to allow her to use her vocal organs ; but when, nearly two years later, she learned that a deaf and blind child had acquired speech, she spelled upon her fingers, 'I must speak'. In response to this emphatic announcement I gave her her first lesson in speech.

"I began by familiarising her with the position and condition of the various mouth-parts and with the trachea. This I did by passing her hand lightly over the lower part of my face, and by putting her fingers into my mouth. I then placed my tongue in the position for the sound of *i* in *it*, and let her find the point, as it lay perfectly still and soft in the bed of the jaw, just behind the lower front teeth, and discover that the teeth were slightly parted. After she had done this, I placed one of her forefingers upon my teeth, and the other upon my throat or trachea, at the lowest point where it may be felt, and repeated the sound *i* several times. During this time Helen, standing in front of me in the attitude of one listening intently, gave the closest attention to every detail ; and when I ceased making the sound, her fingers flew to her own mouth and throat, and after arranging her tongue and teeth she uttered the sound *i* so nearly like that I had made, it seemed like an echo of it. When told that she had given the sound correctly, she repeated it again and again. I next showed her, by means of her sensitive fingers, the depression through the centre of the tongue when in position for the sound of *ä*, and the opening between the teeth during the utterance of that sound. Again she waited with her fingers upon my teeth and throat until I sounded *ä* several times, and then she gave the vowel fairly well.

A little practice enabled her to give it perfectly. We then repeated the sound of *ĭ* and contrasted it with *ä*. Having these two differing positions well fixed in her mind, I illustrated the position of the tongue and lips while sounding the vowel *ô*. She experimented with her own mouth, and soon produced a clear, well-defined *ô*. After acquiring this, she began to ask what the sounds represented, and if they were words. I then told her that *ĭ* is one of the many sounds of the letter *i*, that *ä* is one of the sounds of the letter *a*, and that some letters have many different sounds, but that it would not be difficult for her to think of these sounds after she had learnt to speak words. I next took the position for *ä*, Helen following as before with her fingers, and while sounding the vowel slowly closed my lips, producing the word *arm*. Without hesitation she arranged her tongue, repeated the sounds, and was delighted to know that she had pronounced a word. Her teacher suggested to her that she should let me hear her say the words *mamma* and *papa*, which she had tried to speak before coming to me. She quickly and forcibly said '*mum mum*' and '*pup pup*'. I commended her efforts, and said that it would be better to speak very softly, and to sound one part of the word longer than she did the other. I then illustrated what I wanted her to understand by pronouncing the word *mamma* very delicately, and at the same time drawing my finger along the back of her hand, to show the relative length of the two syllables. After a few repetitions the words '*mamma*' and '*papa*' came with almost musical sweetness from her lips.

"This was Helen's first lesson. She was an ideal pupil, for she followed every direction with the utmost care, and seemed never to forget anything told her. She had but ten lessons, yet in this short time she acquired all of the elements of speech, and combined them easily and naturally. At the close of her lessons she used speech fluently.

"Helen received her first lesson on the 26th of March, 1890; and on the 19th of the following month, while at the house of a friend, she gave oral account of a visit she had made to Dr. Oliver Wendell Holmes. I sat near her while she was speaking, and noted the words as they fell from her lips. I think there were but four that I did not fully understand, and those I asked her to spell upon her fingers. . . .

"Her free use of speech on this day was very noticeable. She seemed conscious of the possession of a new power, and gave herself up to the full enjoyment of it. On her way home she remarked: 'I am not dumb now'."

Less than one year later (20th Feb., 1891), Dr. J. H. Williams, principal of an institution for deaf-mutes at Hartford, Conn., going to see Helen in a very sceptical mood but having all his doubts quickly removed, gives this notion of the progress she had made in the interval: "I sat down beside her, and carried on [presumably by manual signs] a running conversation concerning a great variety of subjects for nearly half-an-hour, and during all that time her part of the conversation, which was animated and sprightly and full of fun, was conducted entirely by speech, and speech so distinct that I failed to understand very little of what she said. She seemed never at a loss for language to express an idea, nor even to hesitate in giving it orally. It was an intelligent speech in a pleasant voice." She had meanwhile begun to make efforts to sing, or (as she called it) 'vibrate,' by imitating the felt movements of lips, throat and chest; also to play the piano. A little later (March-June, 1891), she had regular musical lessons, into which she entered with

characteristic ardour. . She ended, for the time, by playing a two-handed piece very creditably, and not without expression, knowing when she was playing louder by the way she pressed the keys and by the stronger vibrations.

How are we now to understand such a triumph of articulation? It is first to be noted that Helen had already shown a positive genius for expression. To be able, after only two years of manual instruction, to read and write with her easy mastery, means a quite exceptional gift. She had almost no difficulty, when starting at the age of seven, in divining a relation between (manual) sign and thing signified. Nor did she remain any time at the level of apprehending single signs, but proceeded swiftly to such combinations as expressed first the relations of physical objects, next the subjective relations of memory-images, feeling and thought proper,—and all with a perfection of grammatical syntax that seemed to cause her hardly any effort. We may suppose, then, that her rich and well-compacted store of words had but to undergo translation from the manual into the oral form to become at once available for true speech. As originally it had "flashed" upon her that the (manual) sign stood for its significate, so now again it was as by sudden flash that the oral sign came to stand to her for the other. But if flash there was, let it not be forgotten how much preparatory work had been done through all the earlier years. Helen's own reminiscences and Miss Sullivan's observations evince in the child an extraordinary spontaneity of vocal utterance. Repressed for a while by the manual instruction, it needed but the least stimulus from without to reassert itself in full force, and, with all the manual acquirement already there, to burst forth in a stream of articulate speech.

But there is still something wanting to an understanding of the earlier manual achievement, so unexampled in its pace. Prof. Graham Bell, in the *Souvenir*, tries to get from Miss Sullivan confirmation of a view he propounded some years ago in the American journal *Science* (No. 329), that in the case of the deaf much reading should be made the substitute for that overwhelming stimulus to expression which comes to the hearing child through the constant iteration of sounds. Children receive, by ear, from parents, nurses and others a large stock of words and sentences, which go far beyond their needs of expression at the time, but are there for future use when occasion calls. Now, as Prof. Bell contended, the deaf child can acquire so serviceable and necessary a store only by reading; and reading, if steadily enough pursued, may easily leave by iteration a far greater deposit of word-symbols than the hearing child acquires by sound. The one drawback which Prof. Bell seemed to overlook is that it may prove very difficult, even with the help of a teacher, to keep a deaf child reading for an hour or two, whereas the ear of a hearing child may easily be kept engaged from morning to night. But it is just here that Helen Keller's wonderful faculty told. Though her teacher started with no theory on the subject, she allows that a prime factor in Helen's development has been a perfectly insatiable appetite for reading; and she adds that, for herself, she has always treated her pupil as far as possible as she would have done a hearing child, and in particular has not been at all careful to keep within the limits of the child's understanding for the time being, but has freely given her unfamiliar words which she might gradually come to understand from their connexion with the more familiar. So far as it goes, Helen's case is therefore distinctly confirmatory of Prof. Bell's theory. But we are, after all, left for the manual, as for the oral, achievement with no other

fundamental assumption than that of a mental endowment of the highest order in all that concerns expression.

No mere faculty of expression, however, can account for the extraordinary qualities of this fascinating child. There are here recorded of her a multitude of other traits, intellectual and moral, which in their way are quite as remarkable as her powers of language ; while of these also there is something more, and something very curious, to recount. We propose to return to the subject in the next number.

G C. Robertson.

THE INTERNATIONAL CONGRESS OF EXPERIMENTAL PSYCHOLOGY.

This Congress, which held its sittings on the first four days of August, was attended by over three hundred persons, including nearly a hundred visitors from all parts of Europe, and from America and Australia. The meeting was a decided success. All branches of experimental psychology received a due share of consideration in the papers and discussion. Owing to the abundance of material, it was found advisable to place Neurology and Psychophysics in one section (A), and Hypnotism with kindred questions in another (B). The following is a general account of the proceeding in each of these sections :—

Section A. The President, after welcoming the foreign visitors, said that it had been the aim of those who had arranged the programme of the Congress to make it as adequately representative as possible of the various lines of inquiry, pursued by very diverse methods, which come within the range of Experimental Psychology—understood in a wide sense. He confessed that England, the ancient and traditional home of Empirical psychology, had taken comparatively little share in the recent movement of the science in an experimental direction : and hoped that this meeting might help to stir English psychologists to follow their American colleagues in emulating the laboratory work of Germany. The importance of physiology to psychologists had been recognised by giving it a leading place in Section A : while, in assigning Section B to Hypnotism and Cognate Subjects, the aim had been to carry on the work of the last Congress without any break of continuity, and at the same time without giving an undue place to any one branch of inquiry. In the study of hypnotism France had taken the lead ; and he was glad to welcome a full representation of the French investigators of the subject.

Prof. Bain followed with a paper on the "Respective Spheres and Mutual Aids of Introspection and Experiment in Psychology," which will be published in the next number of Mind.

Dr. Gruber, from Roumania, then presented a report of experiments, made in continuation of those of which he had given an account at the Congress of 1889, on the peculiar association of sensations of one sense with images belonging to another, which some exceptional human beings' experience. The leading case of this is the association of sound with imaginary colour : but similar associations are found between several pairs of senses,—among others he mentioned cases of "resistance gustative" and "chromatismes de temperature". His most elaborate experiments on "coloured audition" had been made with a man of considerable intellectual cultivation, capable of exact introspective observation ; whose associations of imaginary colours with vowels and numbers had been carefully tested and found to be remarkably precise and regular.

Mr. Francis Galton, in the course of some remarks on the paper,

mentioned that the Egyptologist Lepsius had similarly associated colour with sound, and had found the association useful in his philological inquiries.

Prof. Richet then read an interesting paper by Prof. RIBOT—who was unable to be present—on the results of his inquiries into the state of consciousness produced in different individuals by the hearing of general terms.[1] The discussion of this paper concluded the proceedings of Monday morning.

On Monday afternoon, after a suggestive survey of "The Future of Psychology" by Prof. RICHET, Prof. PIERRE JANET read a paper on certain remarkable cases of morbid amnesia, which led to some discussion. An account of this will be given in connexion with the proceedings of Section B. Dr. W. R. NEWBOLD, of the University of Pennsylvania, concluded the proceedings with a paper recording the results of systematic introspective observation of the "characteristics and conditions of beliefs in or immediately suggested by concrete objects actually present to consciousness". The beliefs—abstracting from differences in the object of belief—are found to be alike "in a certain vague quality, and a vague, probably pleasant, feeling-tone"; and to vary only in intensity. The only essential condition of the occurrence of such a belief is "the presentation to consciousness of a vector-state or sequence involving a perception": but it is affected by other conditions, such as the frequency with which the sequence in question has occurred, which bears a relation to the intensity of the belief, and the feeling-tone of the object of belief.

On Tuesday morning the discussions in Section A were purely neurological. Prof. Hitzig presided. First, Prof. HENSCHEN of Upsala traced the path of the visual nerve-process in man to the "visual centre in the cortex of the calcarine fissure". Prof. SCHÄFER gave the results of experiments tending to show that the prefrontal lobes are *not* especially the seat of intelligent attention; and Dr. WALLER discussed more generally the functional attributes of the cerebral cortex. The debate in which most divergence of opinion was manifested arose out of Prof. HORSLEY's paper on the "Degree of Localisation of Movements and Correlative Sensations".

The theories expounded in this section on Tuesday afternoon—though still primarily physiological—had a more direct psychological interest. Prof. EBBINGHAUS, of Berlin, gave a long but interesting exposition of a theory of colour-perception based on Hering's, but differing from this (1) in identifying Hering's "yellow-blue" substance with the visual purple found in the rods of the retina, (2) in attributing the twofold sensation connected with each visual substance to a twofold process of decomposition, instead of (as Hering) to decomposition and restitution of the substance. Thus, according to Ebbinghaus, the decomposition of visual purple causes the sensation yellow, then when this decomposition has produced "visual yellow" a further decomposition is the means by which we get the sensation blue. A corresponding twofold decomposition must be assumed to take place in a "red-green substance" which we must suppose to exist in the cones where no visual purple is found.

[1] These results were partly published in the *Revue Philosophique* for October, 1891 (see MIND, Jan., 1892, p. 154): but the paper contained an account of some further experiments. One group of these, made upon hypnotic subjects, will be noticed later, in connexion with the proceedings of Section B.

Another paper was then read on the same subject by Mrs. Ladd Franklin, in which certain difficulties of the Young-Helmholtz theory were sought to be avoided, not by adopting any modification of Hering's view, but by supposing a gradual differentiation of "colour-molecules," in the course of evolution, out of a substance which originally only caused sensations of black, white, or grey.

The discussion that followed was addressed chiefly to Prof. Ebbinghaus' theory: against which the complicated character of the hypothetical physiology involved, and the unexplained latency of the red-green substance, as compared with the obviousness of the visual purple, were urged as objections. Prof. Ebbinghaus, in reply, admitted that if all attempts to discover the red-green substance failed, the theory would have to be dropped; but he did not regard it as surprising that the search had yet to be made.

In the general meeting on Tuesday afternoon, the first paper read was by Prof. Preyer, of Berlin, on "Arithmogenesis". The concepts of number, like other concepts, must arise somehow through sensation: the child must *feel* numbers before it thinks them. We cannot suppose that the series of integers resulted from addition of 1 to 1, 1 to 2, and so on: since this hypothesis presupposes the knowledge of a number—2—and of the method of addition; but both these cognitions have to be acquired. Prof. Preyer holds that they are normally acquired chiefly through hearing and comparing tones, and only receive a subsequent confirmation through touch and sight. "Die kleinen ganzen Zahlen sind ursprünglich Namen für die befriedigendsten Tonintervallgefühle." This view of the origin of numbers he held to throw light on the relations between prime and other numbers.

Prof. Richet then read a paper by Prof. Lombroso—who was prevented from being present by ill-health—on the "Sensibility of Women". It gave the result of systematic experiments with special appliances, on the comparative fineness of the sense of touch, and the sensibility to pain, in both sexes. Prof. Lombroso's conclusion from these experiments was that the sensibility of women was markedly inferior to that of men in both cases. This experimental result he regarded as confirmed by the experience of surgeons as to the greater power of enduring pain manifested by women. The popular opinion to the contrary he held to be due to the greater tendency of women to give expression to feelings of pain, by tears or otherwise: such expression being in their case less restrained by public opinion, and being even encouraged by experience of its utility as a means of persuasion. He was disposed to attribute the greater longevity of women partly to their inferior susceptibility to pain.

The proceedings concluded with a paper by Prof. Lloyd Morgan on "The Limits of Animal Intelligence". He laid down (1) that, human psychology being the only key to animal psychology, we should first study animals in close affinity to man; and (2) that in no case is an animal activity to be interpreted as the outcome of the exercise of a higher psychical faculty, if it can fairly be interpreted as the outcome of the exercise of one which stands lower in the psychological scale. He held that we may fairly suppose a dog to have a "wave of consciousness" like in its general nature to our own, and internally determined by contiguity, and probably also by similarity. But applying his second principle, he concluded that it was premature—in the present state of the evidence—to attribute to the dog introspection or definite perception of relations as distinct from mere "feeling or sensing" of relations.

Prof. Sully expressed a general agreement with Prof. Morgan's

views : he had always thought that there was a tendency in dealing with animal mind to read too much of human forms of psychosis into its processes, and that even Darwin, with all his caution, had not avoided this error.

On Wednesday morning the chief discussion in Section A was psychophysical, introduced by two papers, which Dr. Mendelssohn, of St. Petersburg, and Prof. Heymans, of Gröningen, respectively contributed. Prof. Ebbinghaus presided. Dr. MENDELSSOHN deduced from clinical observations, made on a large number of partially anæsthetic persons, the conclusion that the "parallel law" of Fechner is not applicable to pathological modifications of sensibility. Prof. HEYMANS laid down as the result of experiment that a normally perceptible pressure, or a normally perceptible difference between two pressures, may be rendered imperceptible by a pressure operating at some distance ; and that the inhibitive force of such a pressure—measured by the difference which it just renders imperceptible between two other pressures—is proportional to its intensity. He proposed accordingly to explain Weber's law—so far as valid for pressures—as an effect of the inhibitive force of the stimuli compared.

Dr. Martius thought that Prof. Heymans' explanation was open to the fundamental objection that it explained the relatively simple by the relatively complex. He drew attention to the existence, in the case both of the eye and of the ear, of differences of stimuli which were not under any circumstances represented by any differences of sensation : the non-perception of these could not be explained by inhibition.

Prof. Ebbinghaus and *Prof. Sully* laid stress on the difference between ideational and sensorial inhibition, which Prof. Heymans was disposed to minimise. In connexion with this *Dr. Mendelssohn* drew attention to the importance of distinguishing simultaneous from successive application of stimuli in this kind of experiment. *Dr. Titchener* remarked on the rarity of the occurrence of the judgment "equal" in Prof. Heymans' experiments, and suggested that this might be due to the reagents' knowledge of the method and its difficulties.

A paper by Dr. VERRIEST on the "Physiological Basis of Rhythmic Speech," and a paper by M. BINET—who was absent—on the "Psychology of Insects," were also read.

The proceedings on Wednesday afternoon commenced with a paper by Prof. BALDWIN, which aimed at showing that Will takes its rise in childhood as a phenomenon of persistent imitative suggestion. This conclusion was primarily based on experiments on the writer's own children and on other children. It was found that the earliest motor responses of the child to the stimulus of external sensation had no apparent imitative character ; and, for some time after imitation has appeared, the child is simply satisfied with its imperfect reproduction of movements seen, and the combination of deliberation with effort which characterises will does not yet manifest itself. It is when the child perceives the inadequacy of its copies of movements that persistent imitation appears—"the try, try again experience"—and in this will is first seen. This conclusion was further supported by experiments on adults, and by evidence from troubles of speech : the order of degeneration of the elements of the speech faculty being the reverse of that of its acquisition as determined by Prof. Baldwin's theory.

In the discussion that followed the opinion was expressed that Prof. Baldwin, while rightly drawing attention to imitation as an important factor in volitional development, had put too heavy a strain on it; and attention was drawn to the limited sphere of imitation in the evolution of animal life.

Reports on the inquiry into the hallucinations of the sane, as carried on under the direction of Prof. Sidgwick in England, M. Marillier in France, and Prof. James in the United States, were then presented by Prof. SIDGWICK and M. MARILLIER. The results of the English collection were printed and distributed in a tabular form. They showed that of 17,000 persons taken at random, about one in ten—1689—remembered experiences of the kind inquired into. The number of experiences recorded was 1871, most of those who answered remembering only a single experience. Only in about one-sixteenth of the experiences was any degree of illness reported—the hallucinations of fever and madness having been excluded from the inquiry. The bearing of the facts ascertained on the hypothesis of telepathy was carefully considered.

The proceedings concluded with the reading by *M. Marillier* of a paper by Prof. BEAUNIS, who was unable to be present. The paper gave a detailed sketch of a "questionnaire psychologique individuel," of which the aim was to ascertain, by elaborate statistical inquiry, the connexion of different psychical characteristics with each other and with physiological conditions.

On Thursday morning, in Section A, Prof. Ebbinghaus presiding, Dr. E. B. TITCHENER gave an account of some experiments on the binocular effects of monocular stimulus; the result of which was to show the validity of Fechner's law of "binocular contrast," but to extend it by recognising a second (complementary) stage of the secondary image corresponding to the complementary phase of the primary image.

Dr. DONALDSON then communicated his anatomical observations on the brain of the well-known blind deaf-mute, Laura Dewey Bridgman, who died in 1889. The point of most interest was the thinness of the cortex, which was most marked in the areas for the defective senses, and, in the occipital region, specially marked on the *right* side, in the visual area as determined by the method of limited lesions. (It was explained that vision of the *left* eye had been completely lost at two years of age, whereas vision of the right eye was partially retained till the eighth year.) In the discussions that followed *Profs. Henschen* and *Schäfer* advocated caution in drawing inferences from lesions.

Dr. LEHMANN then gave the results of experiments on the relation between Respiration and Attention. He found, using the method of continuous registration, that the oscillations of attention were not directly caused, as Münsterberg had suggested, by the innervation of the respiratory muscles; further, by the method of momentary registration, he found that while what he called "das Auflodern der Empfindung" occurred as frequently during expiration as during inspiration, it occurred but rarely during the pause between two breathings, and almost never when the effort of inspiration was at its height. He inferred that in the former case the relatively small pressure of blood in the brain, in the latter case the relatively great expenditure of energy in breathing, were conditions unfavourable to the production of conscious sensation. In the discussion that followed, *Dr. Martius* and *Prof. Schäfer* expressed doubts as to the reference of this effect to the diminution of blood-pressure.

A paper by Dr. GOLDSCHEIDER, who was not able to be present, giving the results of experiments on the muscular sense of the blind, was then read by *Prof. Ebbinghaus*. The chief results were:—

That blind persons, who are practised in the exercise of the sense of touch, show almost universally a demonstrable increase of delicacy in their sensations of passive movements in the joints of the hands and fingers.

That the cause of this increased delicacy is psychical; it is due

to sharpening of the attention and practice in turning sensible indications to account.

That the skin-sense of locality in the blind shows only a slight, and not always demonstrable, increase of delicacy.

That feeling of movement is the most important factor in the cognition of forms through touch.

In the discussion that followed, *Prof. Ebbinghaus* referred, by way of analogy, to the established fact that the extraordinary keenness of vision of the savage, in recognising objects at a great distance, did not rest on any superiority of discriminative retinal sensibility, but was the result of exceptional interest and practice.

On Thursday afternoon Dr. LIGHTNER WITMER gave the results of experiments on the æsthetic value of the mathematical proportions of simple figures. His method was to take a number of series of very simple figures—*e.g.*, one series of crosses, another of parallelograms, &c.—arranged so that the mathematical proportions of the figures in each series increased regularly from 1 : 5 (or some larger number) to 1 : 1; the æsthetic pleasure or displeasure caused by each figure to each of a number of different persons was then ascertained and recorded. The result was that—putting aside the pleasing proportion of 1 : 1 or "perfect symmetry"—the "relative pleasing quality of all mathematical proportions can be expressed by a curve which rises from 1 : 5 first rapidly, then more slowly, to a maximum between 1 : 2 and 2 : 3, and then falls more rapidly than it rose to a proportion close to 1 : 1". The average of all results placed the maximum of this curve near the ratio known as the "golden section"; still, the experiments did not support Zeising's view that the æsthetic value of the most pleasing proportion depends on the mathematical properties of this ratio.

In the discussion that followed Dr. Witmer explained that his curve gave negative as well as positive values.

Papers followed by Dr. WALLASCHEK on "The Effect of Natural Selection on the Development of Music," in which stress was laid on the social utility of primitive music, as facilitating association in important common actions, such as war and hunting; and by Prof. Von TSCHISCH on "The Relation of Reaction-time to the Breadth of Perception".

It was then agreed that the next Congress should be held in Munich in 1896, under the presidency (it was hoped) of Prof. Stumpf, Dr. Freiherr v. Schrenck-Notzing being nominated as secretary.

A committee was appointed to consider the desirability of holding an extraordinary meeting next year in America.

The Congress was then brought to a harmonious close, with votes of thanks, and expressions of satisfaction on the part of the visitors.

Pressure of time prevented the papers of two absent members—Prof. Lange and Prof. Münsterberg—from being read; but a full abstract of each will appear in the Report of the Congress, which will be published in October or November.

Section B of the International Congress of Experimental Psychology was devoted to the discussion of 'hypnotism and phenomena cognate to those of hypnotism'. The attendance of members of the Congress was large, the number present sometimes reaching two hundred, many of whom were foreigners. The bulk of the papers read came from well-known French savants—MM. Bernheim, Liébeault, Liégeois, Pierre Janet, Bérillon. The Belgian Prof. Delbœuf also read a communication in French. One German, Prof. Hitzig, read a paper in English, and so did one Dutchman, Dr. van Eeden. Dr. Milne Bramwell showed and

explained some experiments; and papers were read by Mrs. Sidgwick and by Mr. Myers. Prof. Ebbinghaus of Berlin, Prof. Mendelssohn of St. Petersburg, Dr. Sperling of Berlin, Dr. Freiherr von Schrenck-Notzing of Munich, the President, and others took part in the discussions.

These names seem fairly representative of the study and practice of hypnotism at the present moment, and although the papers covered a wide range, the growth of certain general tendencies, as compared with the Congress held in Paris three years since, might be plainly noted. Speaking broadly, there was a tendency to greater agreement as to fact, and to greater diffidence as to theory.

I. In the first place, as to the actual observed facts of hypnotism, there is now a more universal admission of the *therapeutic advantage* derivable from hypnotic suggestion. The former doubt as to this beneficial action was mainly connected with the view, now rapidly losing ground, that hypnotism was in itself a form of hysteria, and likely to induce other forms. It still remains impossible to doubt that injudicious hypnotism may do serious harm; but the mishaps thus far recorded have been fewer than was probably expected in any quarter. On the other hand, many of the cures effected by suggestion have now had time to prove their permanence. Although it was not with these therapeutic uses of hypnotism that the Congress was primarily concerned, some remarkable cures were recorded. Dr. Liébeault's paper described the complete cure of a case of suicidal monomania. Prof. Delbœuf described the permanent relief, by external suggestion and self-suggestion, of a high public functionary, who had been rendered miserable for twenty years by morbid apprehensions, and of a young mother obsessed by a continual insane impulse to murder her husband and children. Dr. Bérillon, in a paper on the use of hypnotic suggestion in education, described the cure by this means of many persistent bad habits which neither punishment nor medical treatment had been able to check. Prof. Hitzig gave a detailed history of an obstinate case of 'attaques de sommeil,' cured by suggestion adroitly made during the transitional state at the onset of the attack. And Dr. van Eeden of Amsterdam summarised the experience of five years' successful practice of 'psycho-therapy'.

II. Along with this fuller agreement as to the desirability of frequent use of hypnotic suggestion in medical practice, went a general recognition of the important fact that susceptibility to hypnotic suggestion is not in itself an indication of hysteria, or of any morbid condition whatever, in the subject. The school of Nancy, of course, have all along been sound on this point; and the strong assertions of Bernheim were here supported by the experience of the Parisian Bérillon, who maintained that 'contrary to the current opinion' (now current in certain small groups alone) 'the difficulties of inducing profound trance are greater in proportion as the child presents more decided traces of neuropathic heredity. Robust and healthy children are usually very suggestible and very hypnotisable. Their hypnotic sleep closely resembles normal sleep; but nevertheless simple suggestion will obtain from them while in this state all the ordinary hypnotic phenomena, as forgetfulness on awakening, negative hallucinations, suggested dreams, the automatic accomplishment of suggested acts.'

III. A third conviction to which independent experience was seen to have led many observers, is that of the great importance of *self-suggestion* in all forms of psycho-therapy. Dr. van Eeden laid almost exclusive stress on what the patient could accomplish for himself, by resolute effort of will, if properly guided and encouraged by his physician. Prof. Delbœuf insisted that (for instance) the cure of the magistrate, above

referred to, was effected merely by a firmer reliance on his own powers of will; by the intensification, that is to say, of a moral process entirely normal, and not really dependent upon assistance from without. Carried away by his growing sense of the essential power of the patient's own will, and the comparative superficiality of the aid afforded by hypnotic artifice, the eminent professor of Liège went so far as to exclaim that 'all there was in hypnotism was the word hypnotism itself'.

IV. But such a dictum is of course not a solution, but only a displacement of difficulties. This great and growing mass of phenomena, these new powers over the organism, these unheard-of effects for good and ill, depend upon something deeper than the mere invention of a name. When Prof. Bernheim asserted that the hypnotic trance was neither more nor less than ordinary sleep, it was well replied by Dr. Sperling that to define thus is simply to add to the conception of common sleep —already mysterious enough—a number of fresh mysteries which you do nothing to explain. The true meaning indeed of this refusal fairly to face the problems of hypnotism is that men of experience are coming to feel that those problems do not really form an isolated group, but are dependent upon some deeper facts in the constitution of man on which neither physiology nor psychology as yet feel themselves prepared to enter. Nor is this change in attitude a thing to be deplored. For a time, indeed, the baffled sense that we are dealing with forces beyond our reach may induce some barrenness in hypnotic discussions. But it is at least a clear gain to have got absolutely beyond such premature and abortive synthesis as the reduction of 'le grand hypnotisme' to the 'three stages' of Salpêtrière exhibitions, or any of those *quasi*-physiological deductions of all hypnotic phenomena from hypothetical changes in cerebral circulation.

The downfall of the Salpêtrière theory is now utter and absolute; and those who predicted its downfall in the very height of its renown—who all along insisted that that famous scheme was nothing more than a Procrustean attempt to force a whole world of psychological phenomena, normal in themselves, and profoundly significant, into the bed of a hystero-epileptical patient—those, I say, who thus saw beyond superficial analogies and clinical prejudices have been justified more rapidly and more completely than could ten years ago have possibly been foreseen.

In the public mind, which must have something definite to lay hold of, a formula can only be ousted by a formula; but it was well that the formula of suggestion, which replaced the formula of 'le grand hypnotisme,' was in itself so indeterminate and unexplained, so capable of adjustment to almost any phenomena which might arise. Yet in its turn it is now being recognised as insufficient. However defined, it will not (for example) cover the cases where the hypnotic subject is told to do something which he cannot ordinarily do, and which the suggester in no way teaches him how to perform. One of the most interesting of the papers in the hypnotic section was an account by Prof. Delbœuf of the appreciation of time by certain somnambules, their power of measuring time-intervals which in their normal state they could not even approximately determine. 'M. Delbœuf,' as the *résumé* of his paper significantly tells us, 'draws no further conclusion from his experiments, except that we have here a subject worthy of study.'

In the same direction lie the experiments of Prof. Ribot, carried out with Dr. Wizel's aid, in the attempt to discover 'l'état immédiat de l'esprit au moment où un concept est pensé,' the image, so to say, generated in the mind by the sudden injection of an abstract idea. 'The highest concepts, such as cause, relation, infinity, excite in most

men's minds no representative image whatever. The mental state which corresponds to these concepts is an *unconscious* one. In the hope of penetrating into the nature of this unconscious state, Dr. Wizel has interrogated certain hysterical patients, first in the hypnotic and then in the waking state. In the somnambulic state their answers are clearer, fuller, more explicit than in the waking state.'

A step—a long step—forward along this little-explored road is marked by Mrs. Sidgwick's paper on Experiments in Thought-Transference, mainly made on hypnotised subjects. On this I shall only say that the gulf between these and other hypnotic experiments—a gulf which once seemed impassable—may now perhaps be more reasonably regarded, not as impassable, but only as profound.

V. I will conclude by some reference to a paper in which both fact and theory were to a great extent novel. I refer to Prof. Pierre Janet's 'Study of certain cases of antegressive amnesia in the malady of psychological disintegration'.[1]

The theme with which M. Janet is here concerned is that of the disintegration of human personality. He shows that the enfeebled personality may lose the power of assimilating any *memories* of current events. After a severe shock, for instance, there may supervene not only a *retrogressive* amnesia, or ecmnesia, a blotting out from memory of some period *before* the accident, but also a continued or *antegressive* amnesia, that is to say, an incapacity of remembering events *succeeding* the accident.

In the present paper, M. Janet has shown, by several examples, that the memories which appear not to be formed are in fact formed ; that they exist somewhere in the patient's mind with the full vividness of ordinary recollections, and that they may spontaneously crop up in dreams, or may be called out by hypnotic suggestion, or by other artifices.

EDITORIAL. — Mr. Herbert Spencer, as one of the seventy-four subscribers to the Croom Robertson Testimonial, desires that remark should here be made upon an expression in the letter, sent to Prof. Robertson, that was printed in the July MIND. Though sent with the names of all the subscribers appended, the letter, as drawn up by a committee of two or three, could not, for various reasons, be circulated for signature. Mr. Spencer takes exception to the phrase "the original founders of the Review," which seems to rob Prof. Bain of the exclusive merit he had in originally starting MIND and bearing the whole financial responsibility of it during its first sixteen years. The expression was not fortunately chosen ; but we are assured by those who perused it that nothing could be farther from their thoughts than to question Prof. Bain's standing in relation to the original series of MIND. This was authoritatively put on record, once for all, by the late Editor in the valedictory remarks with which he closed last year's volume. At the same time, we gladly here make note, again, of the fact as now recalled by Mr. Spencer.

We regret to have to announce the death of Prof. G. C. Robertson, the late Editor of "Mind". An obituary notice will appear in our next.

[1] The chief facts of the case on which this paper mainly turns have been given in English in the *Proceedings of the Society for Psychical Research*, part x xii. p. 379.

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

SCARBOROUGH COLLEGE LIBRARY

B
1
M65
n.s.
v.1

Mind

NOT TO BE TAKEN FROM THE ROOM